TC-K679ES/K690

SERVICE MANUAL

US Model
TC-K679ES
TC-K690
Canadian Model
UK Model
TC-K679ES
AEP Model
TC-K690

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol ᴅᴅ are trademarks of Dolby Laboratories Licensing Corporation.

Photo:TC-K679ES

Model Name Using Similar Mecanism		TC-K677ES/K670
Tape Transport Mechanism Type	TC-K679ES	TCM-200V9
	TC-K690	TCM-200V10

SPECIFICATIONS

Recording system 4-track 2-channel stereo
Fast winding time Approx. 90 sec. (with Sony C-60 cassette)
Bias AC bias
Heads Erasing head × 1 (S&F head)
Recording head × 1 (SD head)
Playback head × 1 (LA head) (K679ES)
Playback head × 1 (SD head) (K690)
Motors Capstan motor × 1 (DC servo motor)
Reel motor × 1 (DC motor)
ASIST (mechanical drive) motor × 1 (DC motor)

Signal-to-noise ratio (at peak level)

Cassette (Dolby NR OFF)	Type IV (Sony Metal-Select/S)	Type II (Sony UX-S)	Type I (Sony HF-S)
	60 dB	59 dB	57 dB

Measured at peak level weighted without NR. The S/N is improved by about 15 dB at 500 Hz and by about 20 dB about 1 kHz with Dolby-C NR on, and by 5 dB at 1 kHz and by 10 dB about 5 kHz with Dolby-B NR on.

Harmonic distortion
0.4% (with Sony Type I, 160 nWb/m, 315 Hz, 3rd H.D.)
1.5% (with Sony Type IV, 250 nWb/m, 315 Hz, 3rd H.D.)

Frequency response (Dolby NR OFF)

Type IV cassette (Sony Metal-Select/S)	20-21,000 Hz (± 3dB,IEC) (K679ES) 20-20,000 Hz (± 3dB,IEC) (K690) 20-16,000 Hz [± 3dB (-4dB recording)]
Type II cassette (Sony UX-S)	20-19,000Hz (± 3dB,IEC) (K679ES) 20-18,000 Hz (± 3dB,IEC) (K690)
Type I cassette (Sony HF-S)	20-17,000Hz (± 3 dB,IEC)

Wow and flutter ±0.09% W.Peak (IEC)
0.05% W.RMS (NAB)
±0.14% W.Peak (DIN)

Inputs

Line inputs (phono jacks)	Sensitivity	0.16 V
	Input impedance	47 kilohms

Outputs

Line outputs (phono jacks)	Rated output level	0.5 V at a load impedance of 47 kilohms
	Load impedance	Over 10 kilohms
Headphones (stereo phone jack)	Output level	0 — 3 mW at a load impedance of 32 ohms

General

Power requirements 120V AC, 60Hz : K679ES (US,Canadian)
K690 (US)
240V AC, 50Hz : K679ES (UK)
220 - 230V AC, : K690 (AEP, Germany)
(or 240V AC adjustable by Sony personnel), 50/60Hz
Power consumption 19 W
Dimensions Approx. 430 × 123 × 300 mm (w/h/d) (17 × 4⅞ × 11⅞ inches) including projecting parts and controls
Weight Approx. 4.9 kg (10 lbs 13 oz)

Supplied accessories
Audio connecting cords (2)

Design and specifications are subject to change without notice.

MICROFILM

STEREO CASSETTE DECK

SONY®

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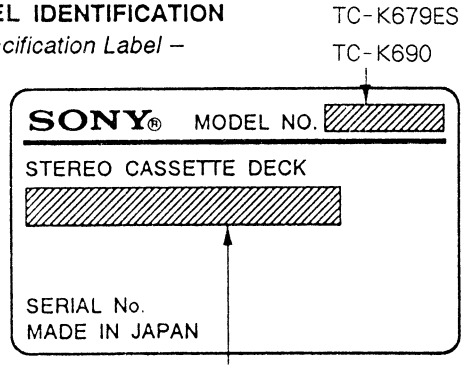
MODEL IDENTIFICATION

– Specification Label –



US, Canadian model : AC120V 60Hz 19W
UK model : AC240~50/60Hz
AEP, Germany model : AC220-230V~50/60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

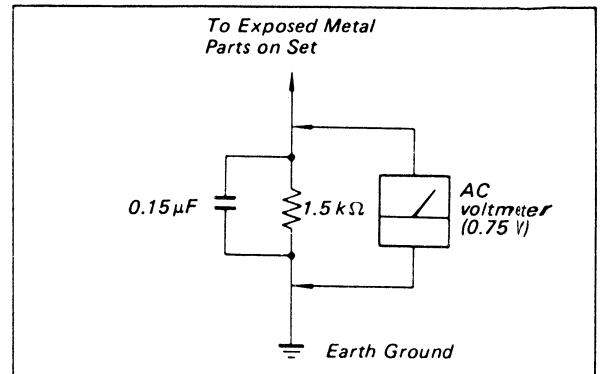


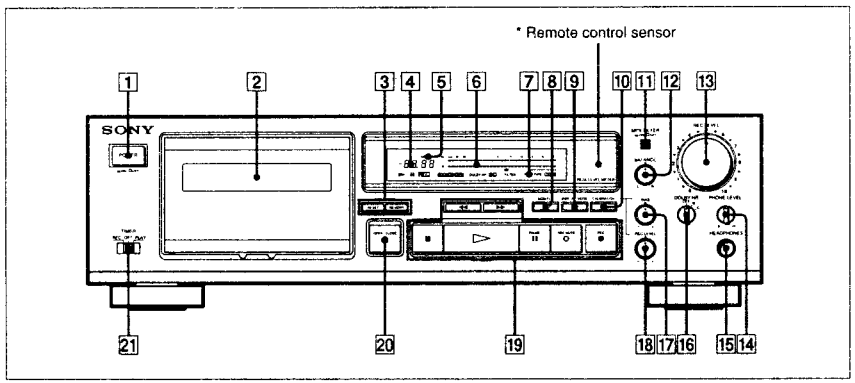
Fig. A. Using an AC voltmeter to check AC leakage.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

Identifying the Parts

Front Panel



For details, refer to the page number indicated in parenthesis.

1 **POWER switch**
2 **Cassette holder**
3 **Counter buttons**
RESET button (page 10)
MEMORY button (pages 9 and 10)
4 **LINEAR COUNTER (page 10)**
5 **MEMORY indicator**
6 **PEAK LEVEL METER (page 12)**
7 **TAPE TYPE indicator**
8 **MONITOR button (page 13)**
9 **DISPLAY MODE button (page 7)**
10 **CALIBRATION button (page 14)**
11 **MPX FILTER button (page 12)**
12 **BALANCE control (page 11)**
13 **REC (recording) LEVEL control (pages 11 and 13)**
14 **PHONE (headphones) LEVEL control (page 7)**
15 **HEADPHONES jack (stereo phone jack) (page 7)**
16 **DOLBY NR (noise reduction) switch (pages 7 and 11)**
17 **BIAS control (pages 14 and 15)**
18 **REC (recording) LEVEL control for calibration (pages 14 and 15)**

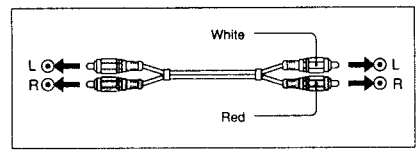
19 **Tape operation buttons**
◀◀ (rewind) button
▶▶ (fast-forward) button
■ (stop) button
► (play) button
❚❚ PAUSE button
O REC MUTE (record muting) button (page 16)
● REC (recording) button
20 **≜ OPEN/CLOSE button**
21 **TIMER switch (page 16)**

***Remote control sensor**
You can remotely control this cassette deck with:
— A remote commander that came with a Sony amplifier or receiver if it has the RM mark and cassette deck control capability.
— An optional Sony remote commander with the RM mark and cassette deck control capability.

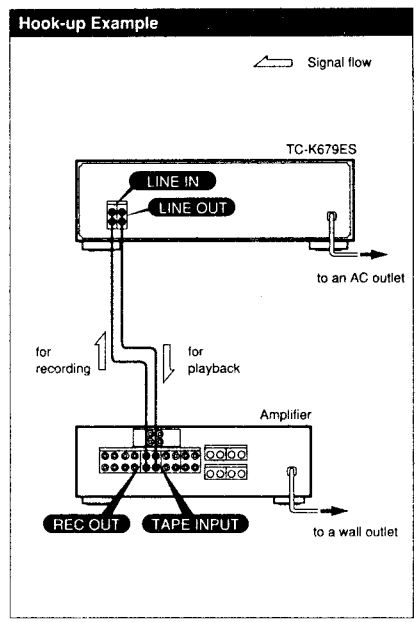
Hooking Up the System

Before You Begin

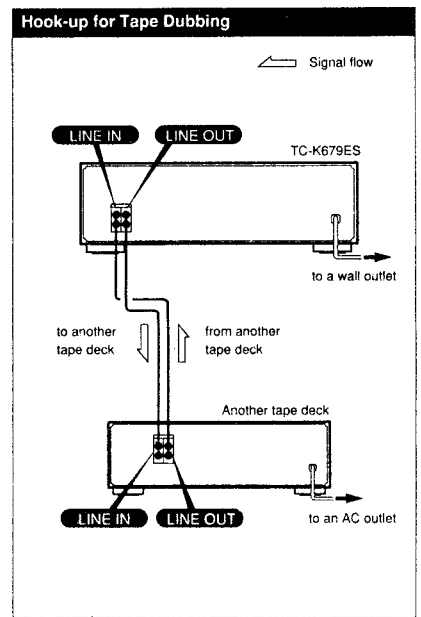
- Turn off the power to all equipment to be connected before making any connection.
- Note that the red plug of the supplied connecting cord is for right-channel (R) connection and the white plug for left-channel (L) connection.
- The connecting cords should be fully inserted into the jacks. A loose connection may cause hum pickup.



Hook-up Example



Hook-up for Tape Dubbing

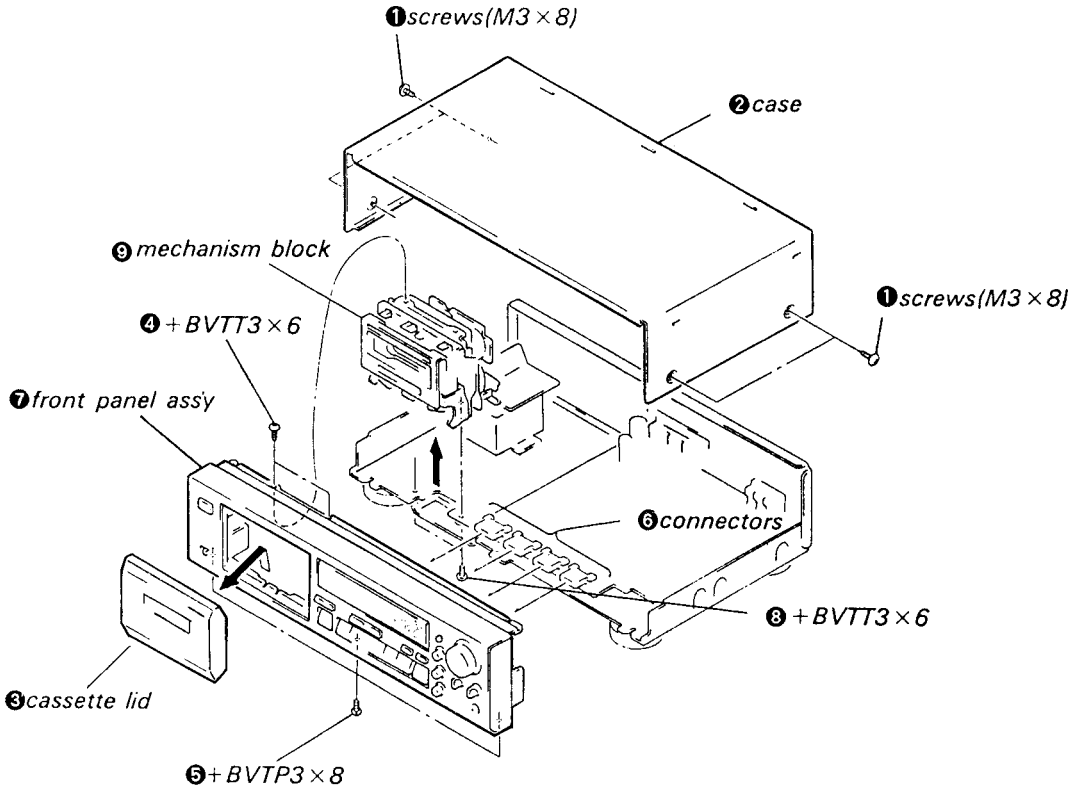


This section is extracted from instruction manual.

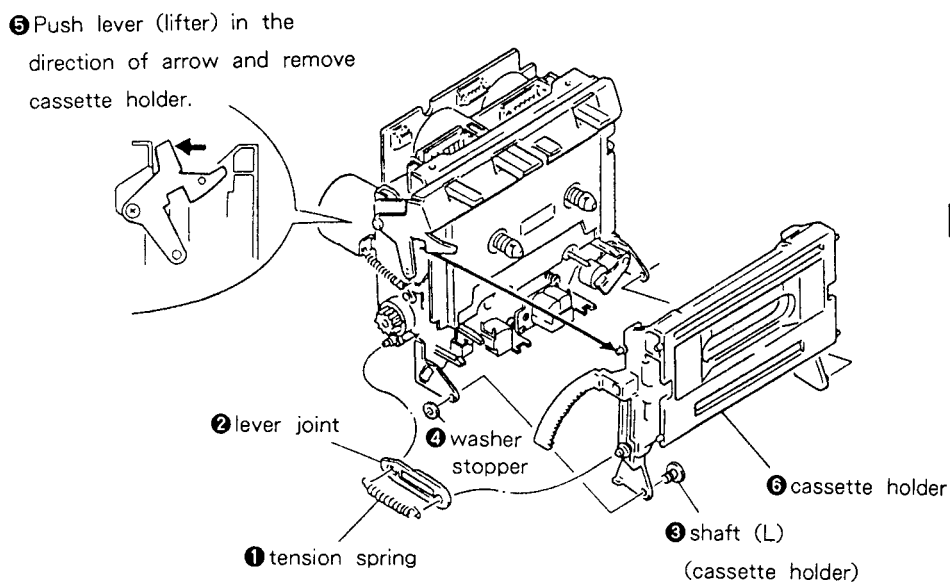
SECTION 2
DISASSEMBLY

NOTE : Follow the disassembly procedure in the numerical order given.

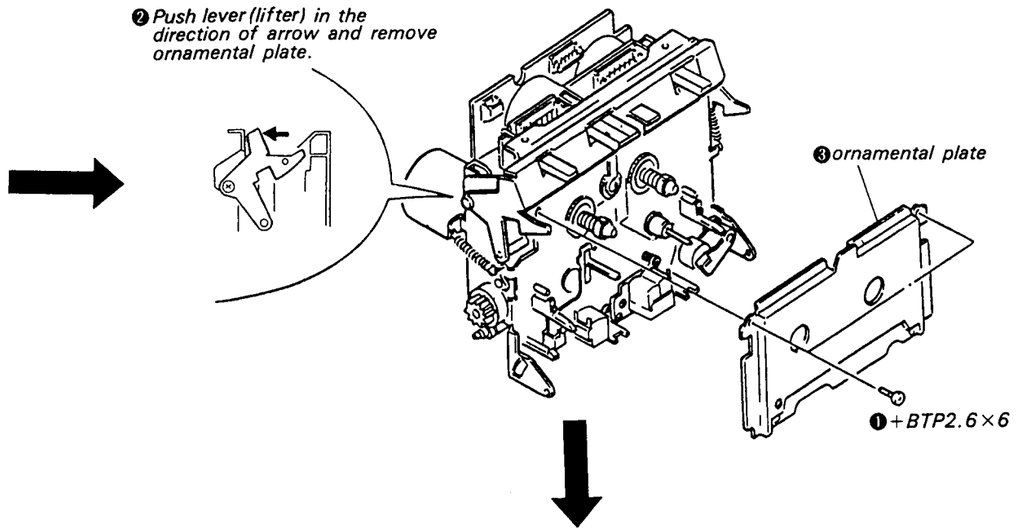
MECHANISM BLOCK



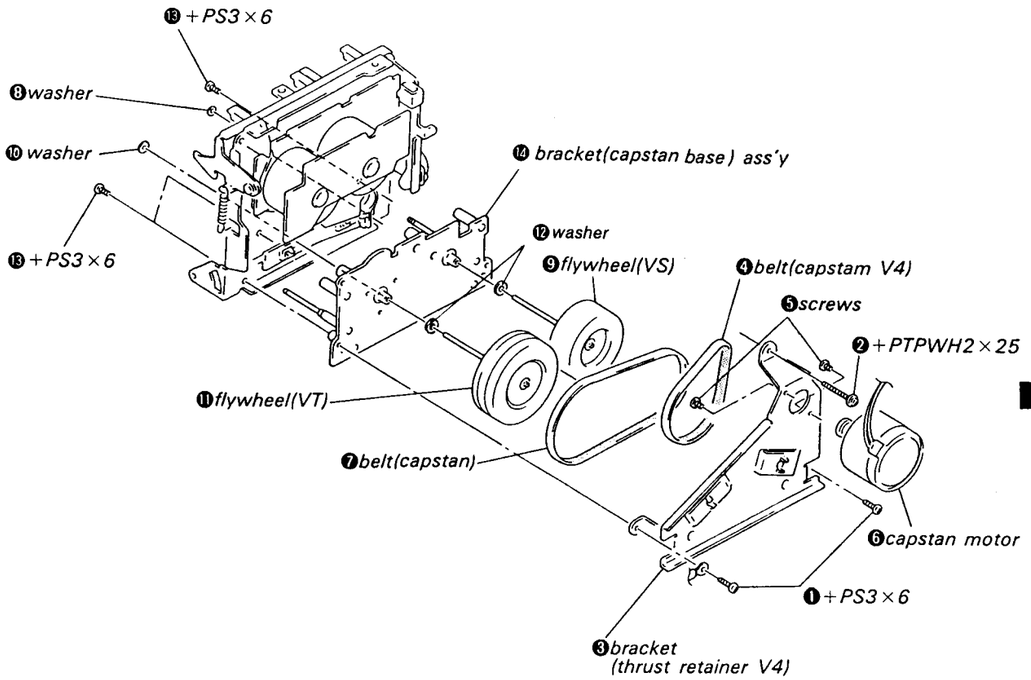
CASSETTE HOLDER


❺Push lever (lifter) in the direction of arrow and remove cassette holder.
❷lever joint
❹washer stopper
❻cassette holder
❶tension spring
❸shaft (L) (cassette holder)

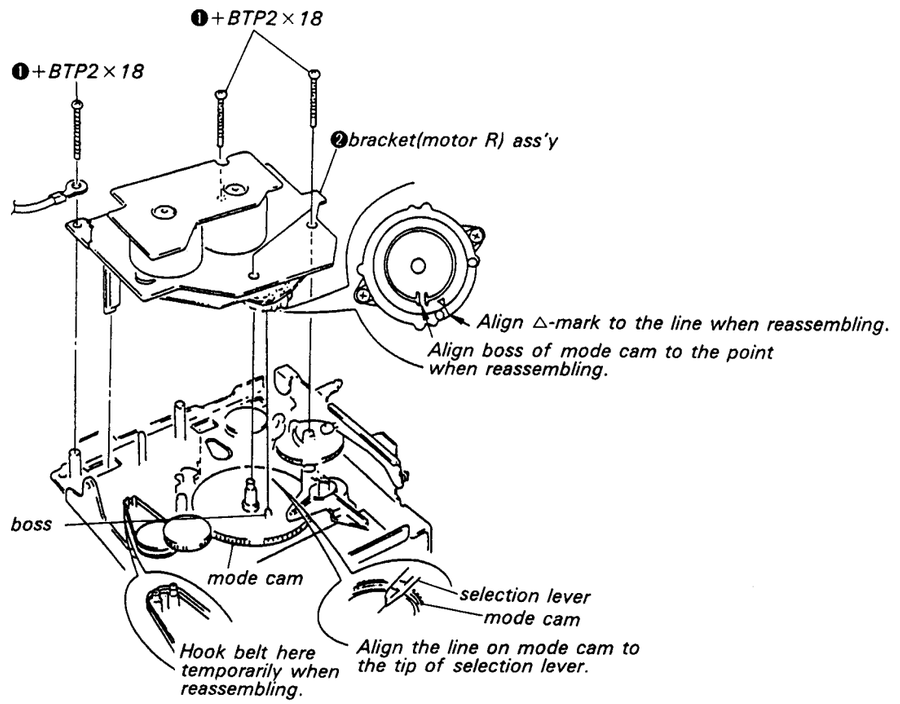
ORNAMENTAL PLATE

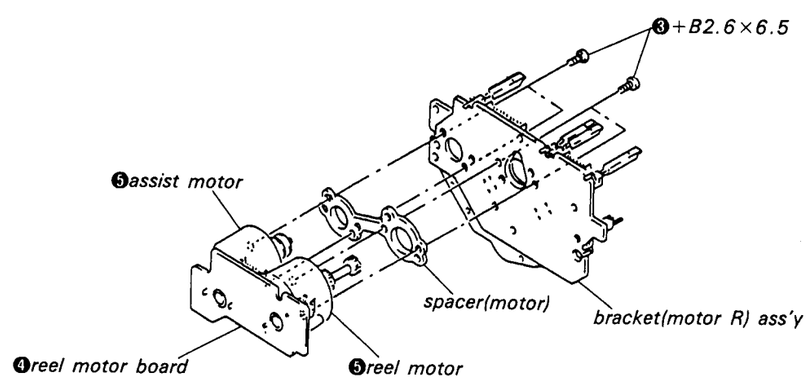


CAPSTAN MOTOR / FLYWHEEL



REEL AND ASSIST MOTORS


❶+BTP2×18
❶+BTP2×18
❷bracket(motor R) ass'y
Align △-mark to the line when reassembling.
Align boss of mode cam to the point when reassembling.
boss
mode cam
selection lever
mode cam
Hook belt here temporarily when reassembling.
Align the line on mode cam to the tip of selection lever.



SECTION 3
PIN DESCRIPTION

•IC701 M50941-728SP(MICRO COMPUTER)

The M50941-728SP function are described below.

Pin No.	Pin Name	I/O	Description
1	V_{REF}	I	Internal A/D port reference voltage input.
2	KEY 7	I	Key input port. 0V = OPEN/CLOSE, 1V = STOP, 2V = REW, 3V = FF, 4V = REC.
3	KEY 6	I	key input port. 0V = PLAY, 1V = PAUSE, 2V = REC MUTE.
4	KEY 5	I	Key input port. 0V = RESET, 1V = MEMORY, 2V = DISPLAY MODE, 3V = MONITOR.
5	METER-L	I	Signal input for level meter-L.
6	METER-R	I	Signal input for level meter-R.
7	TIMER	I	Timer REC/PLAY switch input. 0V = TIMER REC, 1V = TIMER PLAY, 2V = OFF.
8	T. PULSE	I	Take-up reel base sensor input.
9	S. PULSE	I	Supply reel base sensor input.
10	AMS. SIG	I	AMS signal input. No song detected = Low. Song detected = High.
11	BIAS	O	Bias oscillation on and off control.
12	MO3V	O	Motor speed control. STOP/PLAY = Low, FF/REW = High.
13	MO4.5V	O	Motor speed control. STOP/PLAY = High, FF/REW = Low.
14	MO-FWD	O	Reel motor rotates.
15	MO-REV	O	Reel motor rotates in reverse.
16	MO-DOWN	O	Head base DOWN output of the mechanical block.
17	MO-UP	O	Head base UP output of the mechanical block.
18	HALF-SW	I	HALF switch input of the mechanical block.
19	REC-SW	I	REC switch input of the mechanical block.
20	DOOR-SW	I	DOOR switch input of the mechanical block.
21	CLOSE-SW	I	CLOSE switch input of the mechanical block.
22	OPEN-SW	I	OPEN switch input of the mechanical block.
23	POWER-OUT	O	"Low" for power off procedure after POWER switch is turned off.
24	POWER-IN	I	Power(AC) off detection.
25	SIRCS	I	Remote control signal input.
26	V_{SS}	—	GND
27	RESET	I	System reset input.
28	XI	I	Clock input(4.19MHz).
29	XO	O	Clock output.
30	XCI	—	Not used.
31	XCO	—	Not used.
32	V_{SS}	—	GND
33	—	—	Not used.
34	PAT3	I	Rotary encoder input to detect the position of the head base of the mechanical block.
|	|	|	
37	PAT0	I	
38	−25V	—	Power supply for driving the fluorescent indicator tube.
39	FL-p	O	Segment data output for the fluorescent indicator tube FL751.
|	|	|	
54	FL-a	O	
55	FL-G5	O	Common data output for the fluorescent indicator tube FL751.
|	|	|	
59	FL-G1	O	
60	MONITOR	O	Source monitor control. Low = TAPE, High = SOURCE.
61	REC-MUTE	O	REC MUTE control. Low = MUTE.
62	LINE-MUTE	O	LINE MUTE control. Low = MUTE.
63	AV_{CC}	—	Analog power supply(+5V).
64	V_{CC}	—	Power supply(+5V).

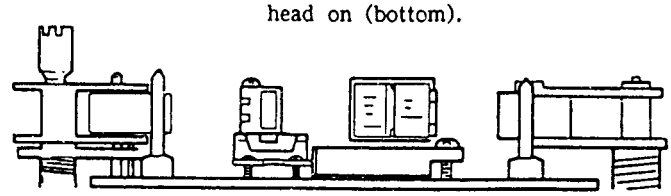
SECTION 4
ADJUSTMENTS

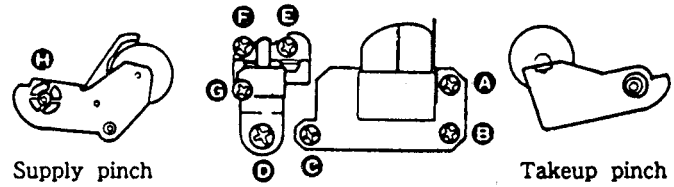
4-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   record/playback head — pinch roller
   erase head — rubber belts
   capstan — idler
2. Demagnetize the record/playback head with a head demagnerizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.

Adjustment Position : As seen from the cassette, side (top) and MD as seen head on (bottom).



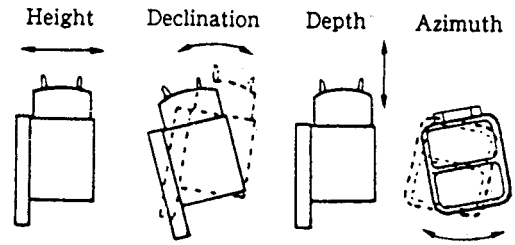


Supply pinch roller | Erasehead | Record/playback head | Takeup pinch roller

Tape Path Adjustment

Note : When using the adjustment methods for other than replacement reasons, please do not tamper unnecessarily with the adjustment screws or the erasehead because either the supply pinch roller guide or the record/playback head will be made the standard tape paths. Moreover, when it is necessary to adjust and replace two or more of any of the heads and/or pinch rollers, replace them one by one, completely taking out the first tape path, and then replacing the second one.

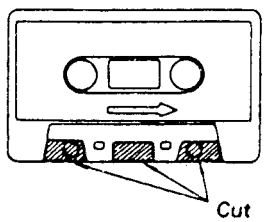
Definition of Terms : The figures are of a record/playback head.



Preparation :

1. Mirror cassette CQ009C 8-909-708-01
   (or CQ012C 8-909-708-02)

   If one does not have this, cut out the sections of a 120-minute cassette shell as indicated below and use that cassette.



2. Phillips screwdriver (medium-size) :
   For the head adjustment screws
   Blade-type screwdriver (large-size) :
   For the supply pinch roller adjustment screws
3. Pen light
4. WS-48B (3 kHz, 0 dB)
5. P-4-A100 (10 kHz, -10 dB)

Adjustment Method :

Supply Pinch Roller

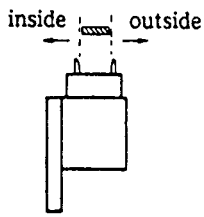
Note : Only perform this adjustment when the supply pinch roller is to be replaced.

1. Insert the mirror cassette and put the unit in record/playback mode.
2. Check to see whether the tape is curling at the record/playback head guide or the pinch roller guide.
   If it is curling, remove the curl by adjusting the ⓕ tape curl adjustment screw. Then, check that the tape is running past the middle of the erasehead.

Record/playback Head

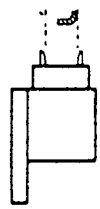
Note : Only perfom this adjustment when the record /playback head is to be replaced.

1. Insert the mirror cassette and put the unit in record/playback mode.
2. (**Height Adjustment**) Check to see if the tape is curling at the tape guide of the head. If it is curling, tighten screws Ⓐ, Ⓑ, and Ⓒ, respectively by the same angle, moving the head so that it remains at the same angle throughout the procedure. If it curls on the bottom side of the mirror cassette (actually the inner side), tighten all the screws equally ; but loosen them if the tape begins to curl on the top side (outer side).



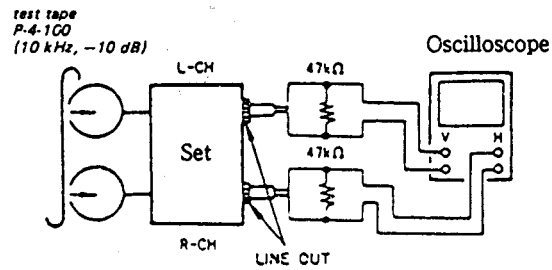
normal (record/playback head as seen from the side of the erasehead.)

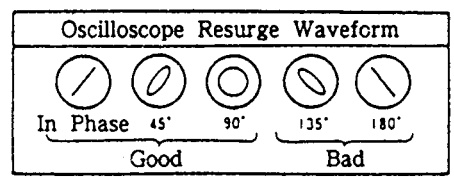
Curling on the inner side. Tighten screws Ⓐ, Ⓑ, and Ⓒ.



Curling on the outer side. Loosen screws Ⓐ, Ⓑ, and Ⓒ.

3. (**Declination Adjustment**) While in the record/playback position, set the back tension to 0 (wind the supply reel with something thin like a pencil in a counterclockwise direction) and make sure there is no curling or shifting (shifting up/shifting down) at the guide of the record/playback head.
   Because shifting can only occur due to a difference in the width of the tape and that of the tape guides (curling will otherwise occur), it is necessary to pay close attention since it can be easily overlooked.
   When there is a shift, tighten screws Ⓑ and Ⓒ equally and change the declination of the head. If the tape is shifting up, tighten the screws, and if it is shifting down, loosen them.
4. Repeat the adjustments in steps 2 and 3 and fine adjust the height and the declination.
5. (**Preliminary Azimuth Adjustment**)
   After demagnetizing and cleaning the adjustment head, play back WS-48B (3 kHz, 0 dB).
   Turn screw Ⓒ so that the reading on the level meter of the unit or that of the level meter connected to LINE OUT is maximized.
   If the screw is turned at least half a revolution, repeat the adjustments from step 1.
6. (**Tape Path Check**) Connect the oscilloscope to LINE OUT and play back P-4-A100 (10 kHz, -10 dB) to display a resurge waveform. After 20 seconds of record/playback (after the tension within the loop has been increased sufficiently), make sure the variation in the resurge is within ± 90 degrees (within ± 45 degrees is desired). If the variation is greater than this, it is because the declination and/or the height adjustment is not perfect. Repeat the adjustments from step 1.

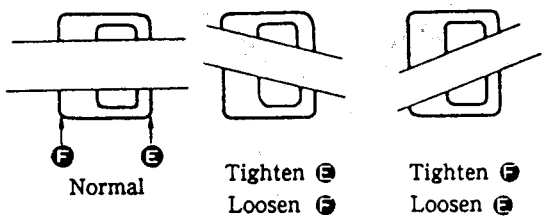




Erasehead

Note : Only perform this adjustment when the erasehead is to be replaced.

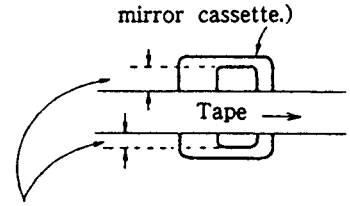
1. Insert the mirror cassette and put the unit in record/playback mode.
2. **(Azimuth Adjustment)** Adjust the azimuth of the erasehead by adjusting screws Ⓔ and Ⓕ so that the tape runs as evenly as possible.



(The erasehead as seen when erasing the mirror cassette.)

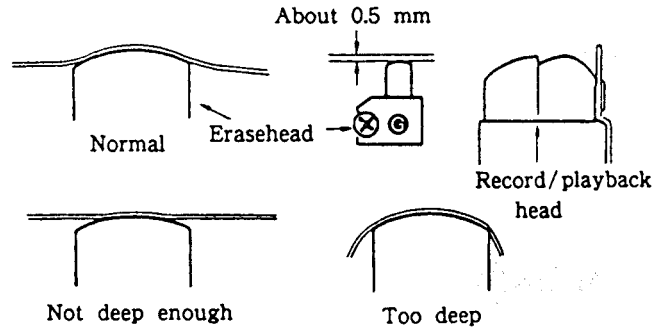
3. **(Height adjustment)** Turn screws Ⓓ, Ⓔ, and Ⓕ all by the same angle so that the portions of the erasehead visible at top and bottom are nearly of equal width. If the width at the top is greater, tighten the screws ; if the width at the bottom is greater, loosen the screws.

Erasehead (The erasehead as seen through the mirror cassette.)



Make these the same width.

4. **(Declination Adjustment)** Leaving it in the playback position, put the back tension to 0 and make certain the erasehead part and supply pinch roller guide part do not shift. If there is a shift, turn the screw Ⓓ and change the declination. Looking at it using the mirror cassette, if the tape shifts up, tighten the screw, and if it shifts down, loosen the screw.
5. Repeat the adjustments beginning with step 2 and fine adjust the height and declination. And make sure the tape does not curl up on the pinch roller guide or the guide part of the record/playback head.
6. **(Depth Adjustment)** In order to make the entire head play the tape smoothly, and to make sure the depth of the erasehead is neither too shallow nor too deep, loosen screw Ⓖ a bit.



Check

1. Check to make sure that there are no curls or shifts throughout the whole tape path and that the tape runs smoothly.
2. Reapply the locking compound to the adjusted screws. (The locking compound should only be applied to screw Ⓖ after the azimuth has been adjusted.)

TORQUE MEASUREMENT

Torque	Torque meter	Meter reading
FWD	CQ-102C	28-60 g · cm(0.39-0.83 oz · inch)
FWD Back tension	CQ-102C	7-11 g · cm(0.097-0.15 oz · inch)
FF, REW	CQ-201B	65-90 g · cm(0.9-1.25 oz · inch)

Pinch Roller Pressing Force Measurement

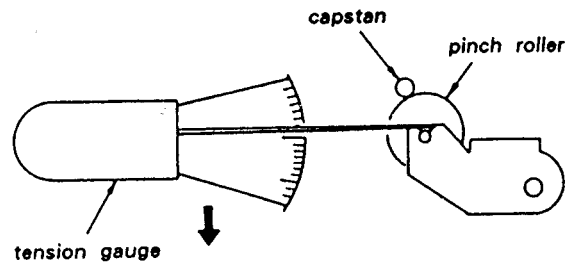
Mode : playback

Hook needle of the tension gauge to the pinch roller shaft and push back pinch roller to detach it from capstan. Then, return it gradually to capstan and read the gauge when the pinch roller begins turnning.

Standard Limits :

Tape-up side : 270-350 g(9.5-120 oz)

Supply side : 180-280 g(6.4-9.9 oz)

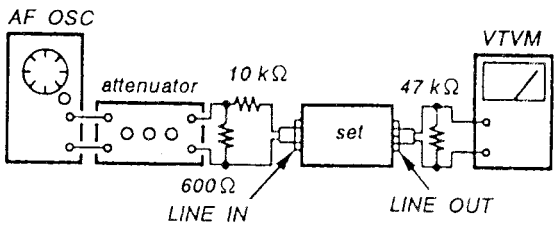


4-2. ELECTRICAL ADJUSTMENTS

Note: The adjustment should be performed in the order given in the service manual. As a rule, adjustments about playback should be performed before those about recording.
The adjustments should be performed before for both L-CH and R-CH.

- Switches and controls shoud be set as follows unless otherwise specified.
  DOLBY NR switch: OFF
  MPX FILTER switch: OFF
  MONITOR switch: Tape
- Standard Record:
  Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

– Record Mode –



Standard Input Level

input terminal	LINE IN
source impedance	10 kΩ
input level	0.5V(– 3.8dB)

Standard Output Level

output terminal	LINE OUT
load impedance	47 kΩ
output level	0.5V(– 3.8dB)

Test Tape

Type	Signal	Used for
P-4-A100	10 kHz, – 10 dB	Azimth Adjustment
P-4-L300	315 Hz, 0 dB	PB Level Adjusumet
WS-48B	3 kHz, 0 dB	Tape Speed Adjustment

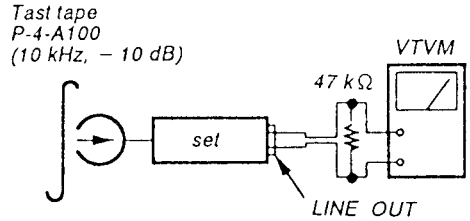
Test Mode

This set will get into test mode by shorting the pins of CNE702 (TEST) on MA I N board before turning the power on.

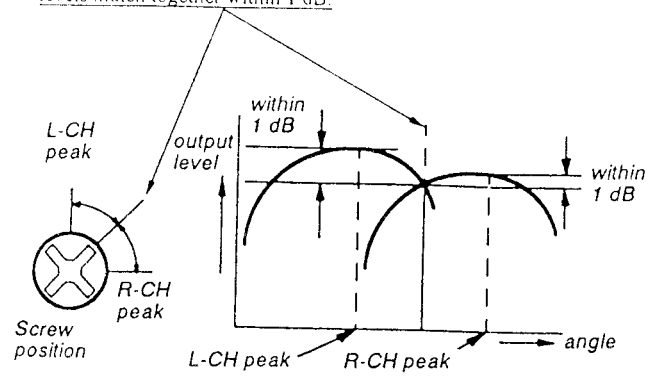
Record/Playback Head Azimuth Adjustment

Porcedure:

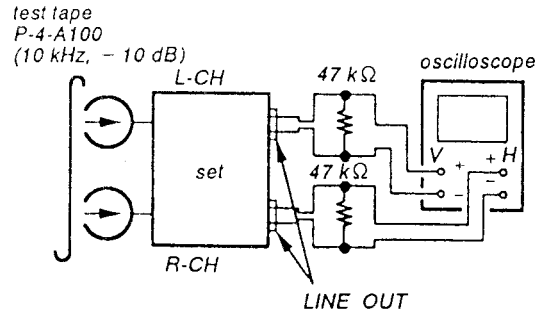
1. Mode: FWD playback

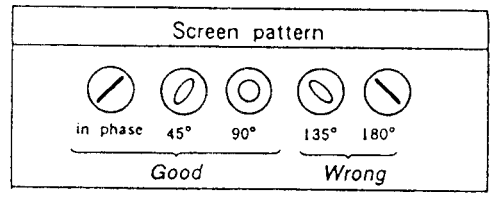


2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1 dB.



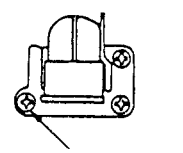
3. Phase Check
   Mode: playback





4. After the adjustment, lock the screws with locking compound.

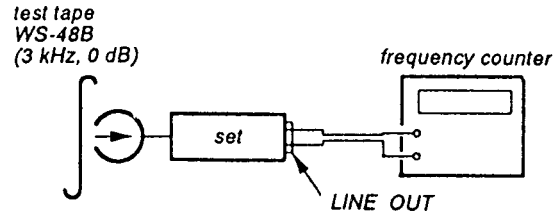
Adjustment Location: Record/Playback head



Tape Speed Adjustment

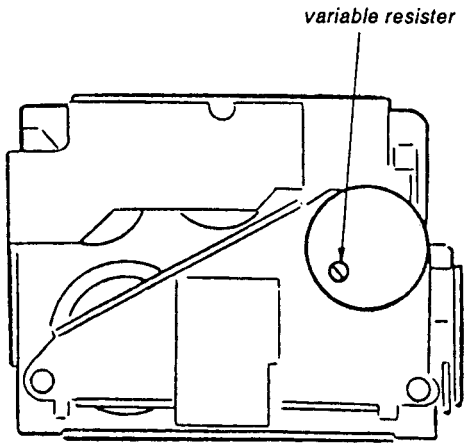
Setting:
Test pin CNE702: short

Procedure:
Mode: playback



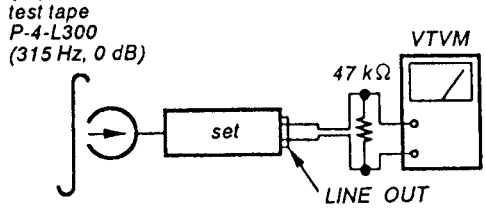
1. Set to FWD playback mode.
2. Adjust motor rear side (variable resister) so that the frequency counter reading becomes 3,000 ± 15 Hz.

Adjustment Location : motor rear side (M1053)



Playback Level Adjustment

Procedure:
Mode: playback



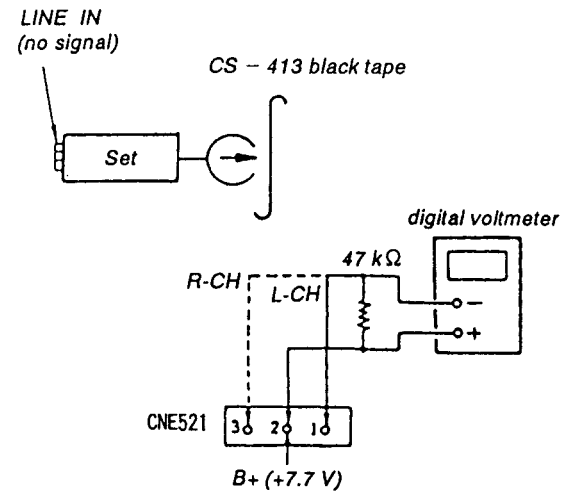
Adjust RV121 (L-ch) and RV221 (R-ch) so that the reading on VTVM meets the adjustment limits below.

Adjustment Limits:
LINE OUT level: − 8.2dB to − 7.2dB (0.301 to 0.338V)
Level difference between channels: less than 0.5 dB
Check that the LINE OUT level does not change even if Playback and Stop operation is repeated several times.

Adjustment Location: MA I N board

Bias Consumption Current Adjustment

Procedure:



1. Set RV181(L - CH) and RV281(R - CH) to mechanical center and turn the set recording mode.
2. Connect digital voltmeter as shown by the following table.
3. Adjust the following transformers for the minimum readings on the digital voltmeter.

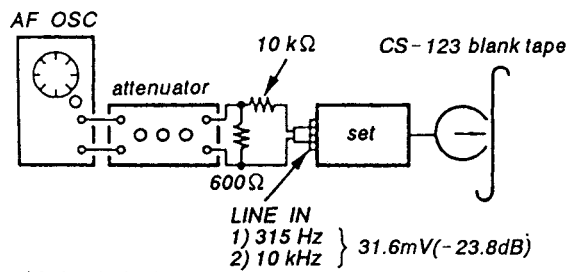
	Mesurement Point	Adjustment Part	Value
L-ch	① and ②, CNE521	T181	not more than 200mV
R-ch	③ and ② CNE521	T281	

Adjsutment Location: MA I N (A) board

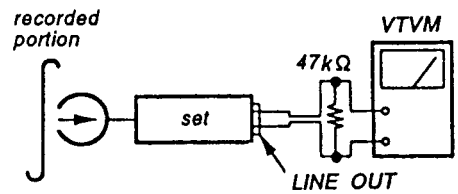
Record Bias Adjustment

Setting:
REC LEVEL control: Standard Record (see page 11)
test pin CNE702: short

Procedure:
1. Mode: record



2. Mode: playback



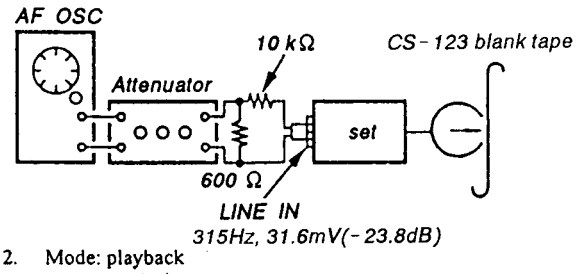
Playback the signal recorded in step 1.
Confirm that the 10 kHz playback output is 0 ± 0.5 dB relative to the 315 Hz output. If necessary, adjust RV181 (L-ch) and RV281 (R-ch) for repeat the steps given above.

Adjustment Location: MAIN BOARD

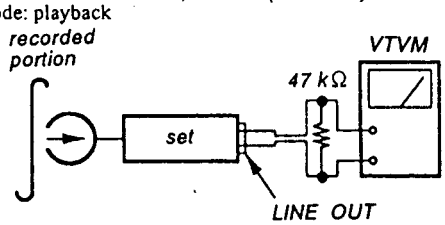
Record Level Adjustment

Setting:
REC LEVEL control: Standard Record (see page 11)
test pin CNE702 : short

Procedure:
1. Mode: record



2. Mode: playback



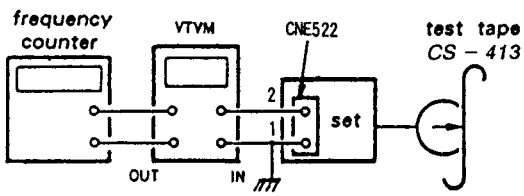
3. Playback the signal recorded in step 1.
   Confirm that the signal level is within the adjustment limits below. If necessary, adjust RV141 (L-ch) and RV241 (R-ch) repeat the step 1 – 2.

Adjustment Limits: – 23.8dB ± 0.5dB (29 to 33.4mV)

Adjustment Location: MAIN board

Erase Current Adjustment

1. Mode : record



2. Adjust RV504 so that the reading on VTVM is 110mV (erase current=110mA.)
3. And then confirm that the reading on the frequency counter is 160kHz.

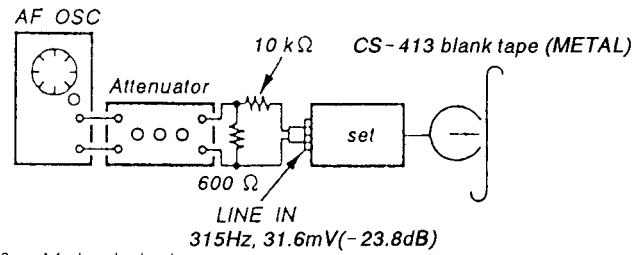
Adjustment Limits:
Erase current: 105mA to 110mA
Frequency: 160 ± 6kHz

Adjustment Location: MAIN board

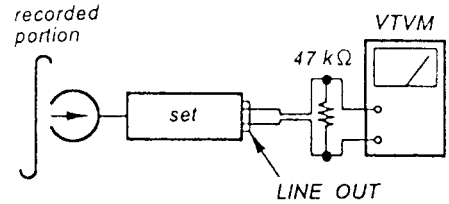
Record EQ (IV) Adjustment

Setting:
REC LEVEL control: Standard Record (See page 11)
test pin CNE702 : short

Procedure:
1. Mode: record



2. Mode: playback



3. Playback the signal recorded in step 1.
   Adjust RV508 so that the R-channel meet the specification.

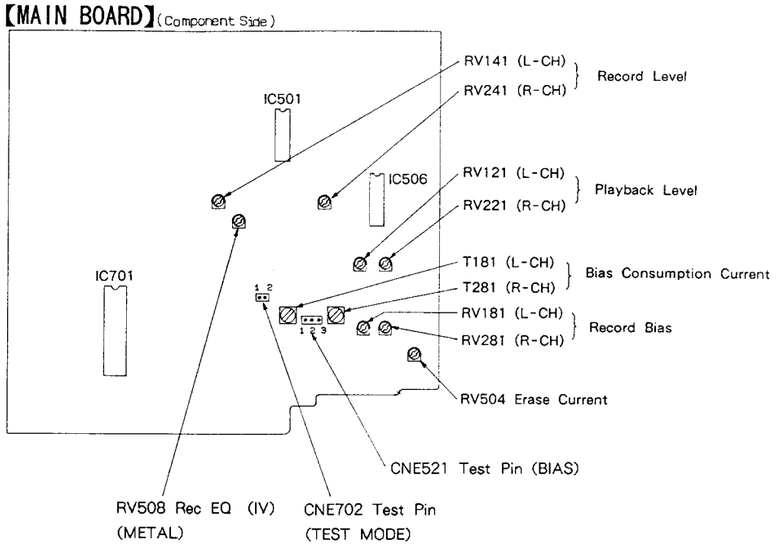
Adjustment Limits:

1. 10KHz level difference against 315Hz reference.
   0dB ± 0.3dB

Adjustment Location: MAIN board

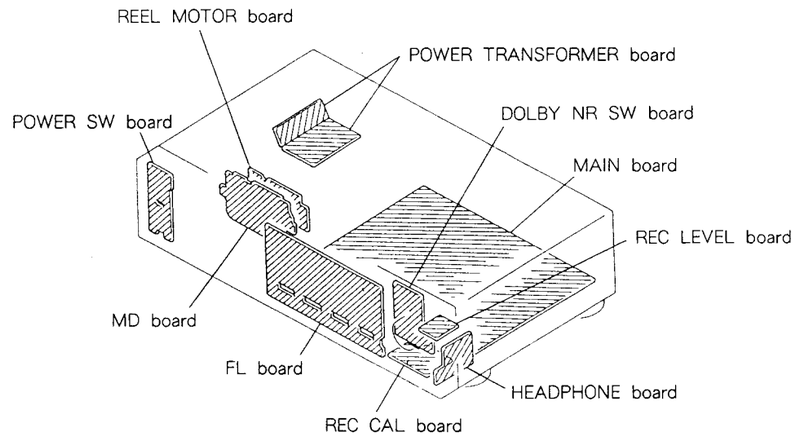
Adjustment Location

【MAIN BOARD】(Component Side)



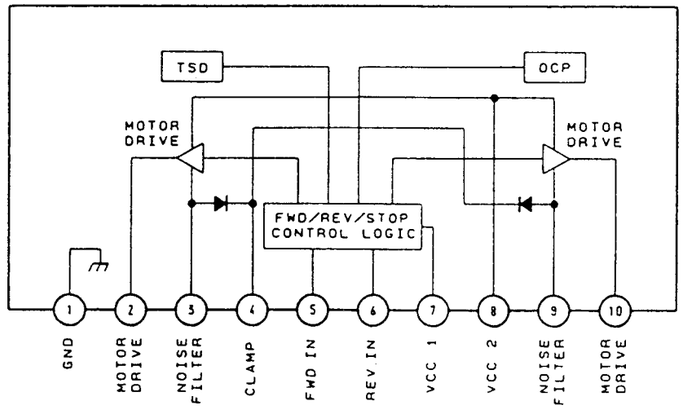
SECTION 5
DIAGRAMS

5-1. CIRCUIT BOARDS LOCATION



5-2. IC BLOCK DIAGRAM

- IC703 BA6219B
- IC704 LB1641



· Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D101	D-3	D752	B-17	IC751	B-14	Q708	C-9
D102	E-3	D801	B-4	IC801	C-3	Q709	A-10
D201	E-3	D802	B-4	IC1001	C-23	Q710	C-7
D202	E-3	D803	B-4	IC1002	C-24	Q711	B-10
D501	G-3	D804	B-4			Q712	C-7
D502	F-7	D805	C-3	Q101	I-3	Q713	C-8
D503	F-7	D806	D-3	Q102	G-6	Q714	A-10
D504	F-3	D807	B-5	Q103	I-7	Q715	D-11
D505	F-3	D812	B-5	Q201	H-3	Q716	D-11
D506	F-7	D813	B-5	Q202	H-6	Q717	B-7
D507	F-7	D814	C-5	Q203	J-7	Q718	B-7
D508	F-7	D815	B-5	Q501	F-3	Q719	C-10
D509	J-10	D816	B-3	Q502	F-3	Q720	D-10
D510	G-10	D817	B-3	Q503	G-3	Q721	D-10
D511	G-10	D818	C-5	Q504	I-4	Q722	D-10
D512	D-6	D819	D-5	Q505	D-6	Q723	E-10
D513	E-6	D820	B-5	Q506	J-10	Q724	E-10
D514	E-6	D822	B-5	Q507	J-9	Q725	E-9
D515	E-6	D823	B-4	Q508	G-10	Q726	E-10
D516	F-10	D1051	C-29	Q509	G-11	Q727	D-9
D701	E-8			Q510	G-11	Q729	E-10
D702	E-8	IC501	G-4	Q511	G-10	Q801	C-3
D703	B-7	IC502	I-4	Q512	G-9	Q802	C-3
D704	B-7	IC503	H-7	Q513	F-6	Q803	C-2
D705	A-7	IC504	H-9	Q514	F-6	Q804	D-2
D706	C-9	IC505	J-8	Q515	F-6	Q805	D-5
D707	C-8	IC506	J-6	Q516	E-6	Q806	D-5
D708	D-7	IC507	I-19	Q517	F-11	Q807	B-3
D709	D-7	IC508	D-6	Q701	E-8	Q808	B-2
D712	E-9	IC509	E-3	Q702	D-9	Q809	B-3
D713	E-10	IC510	G-3	Q703	D-8	Q810	C-4
D714	D-10	IC701	B-10	Q704	E-8	Q811	D-4
D715	D-10	IC702	E-9	Q705	B-6		
D718	D-10	IC703	B-6	Q706	B-6		
D751	B-17	IC704	A-6	Q707	C-9		

Note on Schematic Diagram :

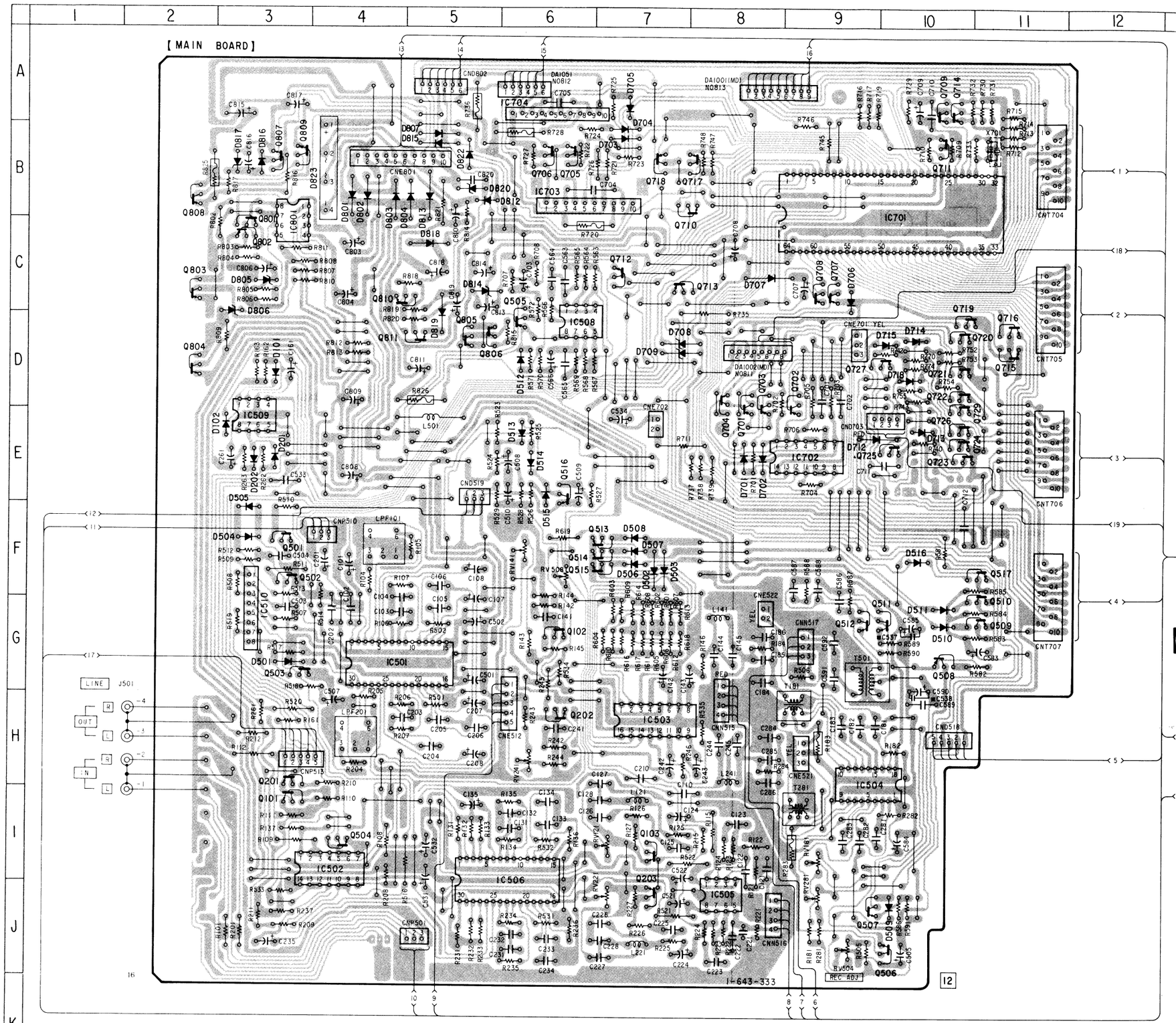
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums. ( ):TC-K679ES
- All resistors are in Ω and ¼ W or less unless otherwise specified. ( ):TC-K679ES
- ⏦: fusible resistor.

Note:	Note:
The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number sppecified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

- B+ : B + Line
- B− : B − Line
- ▭ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark : PB
  ( ) : REC
- Voltages are taken with a VOM (input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ▷ : PB
  ▷▷ : REC

Note on Mounting Diagram :

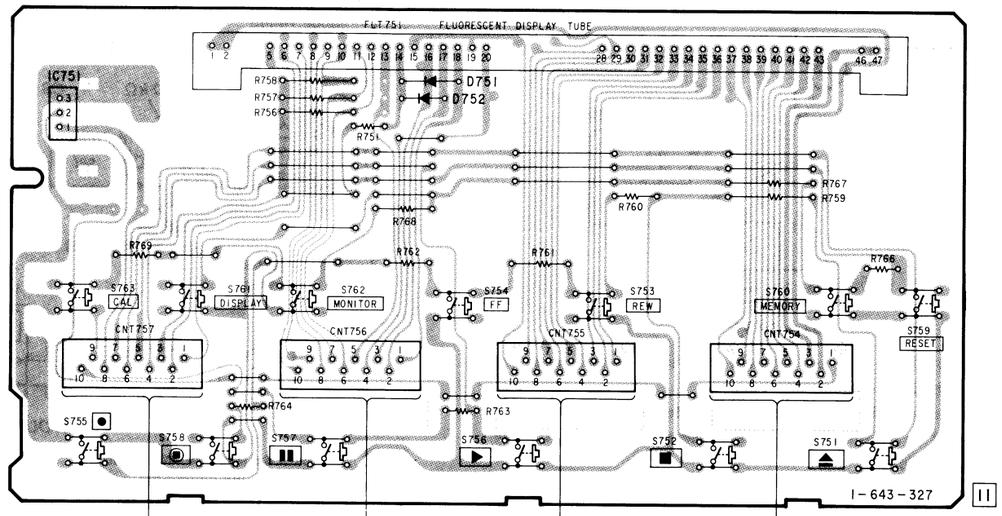
- ○—— : Parts extracted from the component side.
- ■ : Parts mounted on the conductor side.



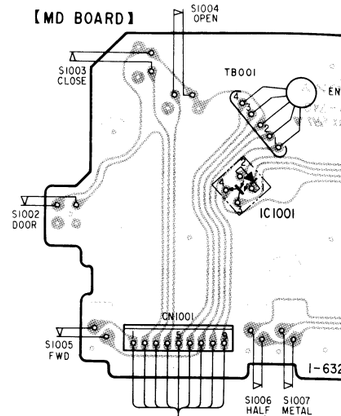
• See page 26 for Semiconductor Lead Layouts.

6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

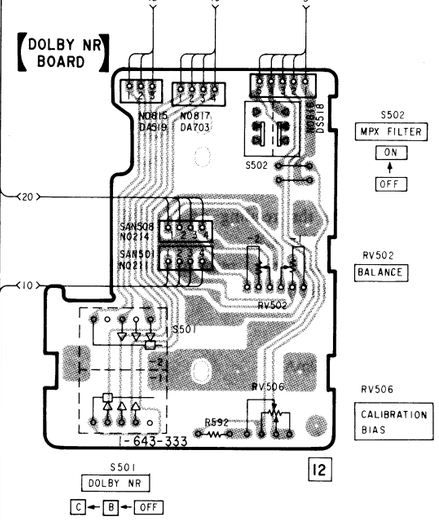
【DISPLAY BOARD】



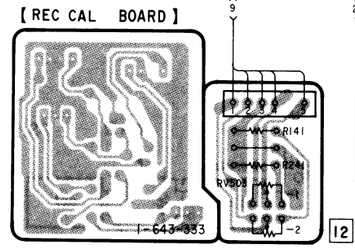
【MD BOARD】



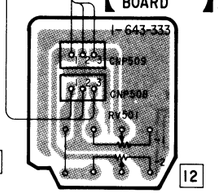
【DOLBY NR BOARD】



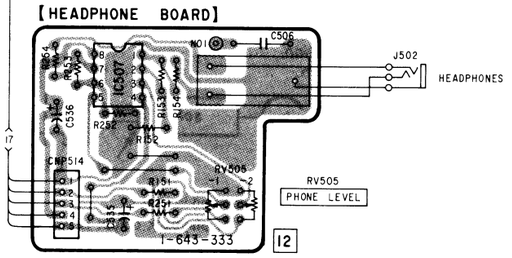
【REC CAL BOARD】



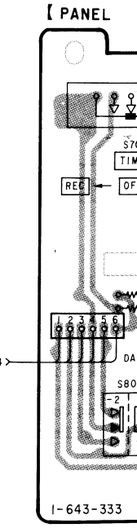
【REC LEVEL BOARD】

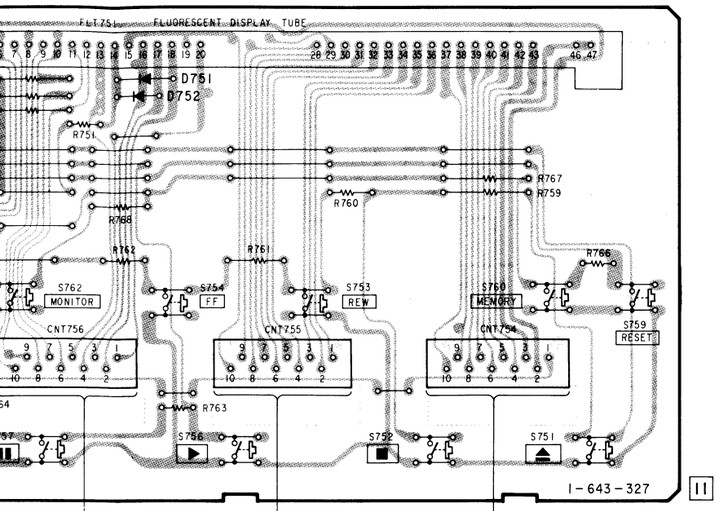


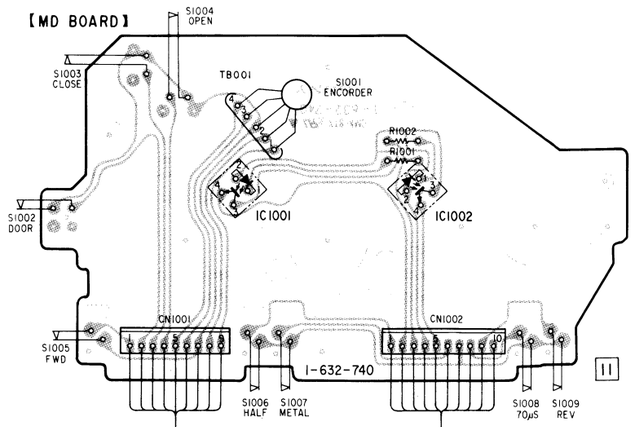
【HEADPHONE BOARD】

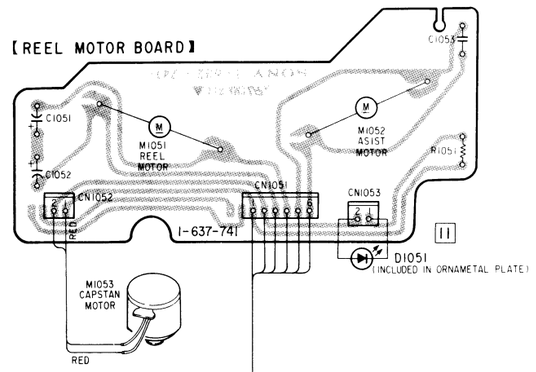


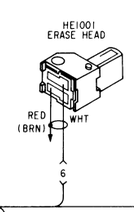
【PANEL

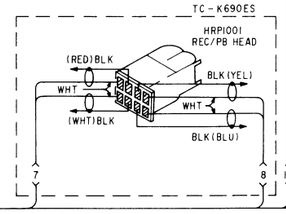


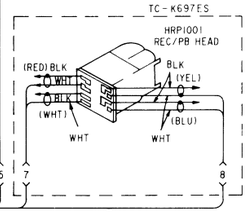

FLT751 FLUORESCENT DISPLAY TUBE
D751
D752
R751
R767
R759
R760
R768
R762
R761
R766
S762 MONITOR
S754 FF
S753 REW
S750 MEMORY
S759 RESET
CN7756
CN7755
CN7754
R763
S756
S752
S751
I-643-327
11

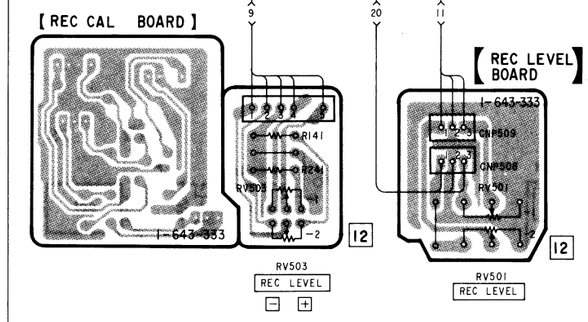

【MD BOARD】
S1004 OPEN
S1003 CLOSE
TB001
S1001 ENCORDER
R1002
R1001
S1002 DOOR
IC1001
IC1002
CN1001
CN1002
S1005 FWD
I-632-740
S1006 HALF
S1007 METAL
S1008 70μS
S1009 REV
11

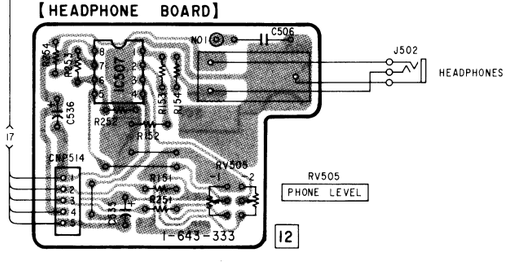

【REEL MOTOR BOARD】
C1053
C1051
C1052
M1051 REEL MOTOR
M1052 ASIST MOTOR
R1051
CN1052
CN1051
CN1053
I-637-741
11
D1051
(INCLUDED IN ORNAMETAL PLATE)
M1053 CAPSTAN MOTOR
RED

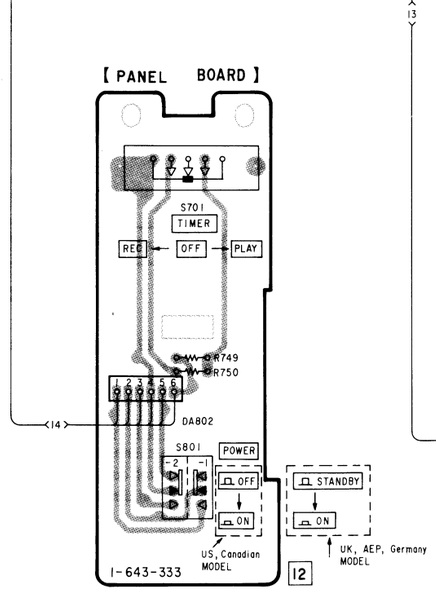

HE1001 ERASE HEAD
RED (BRN)
WHT
6

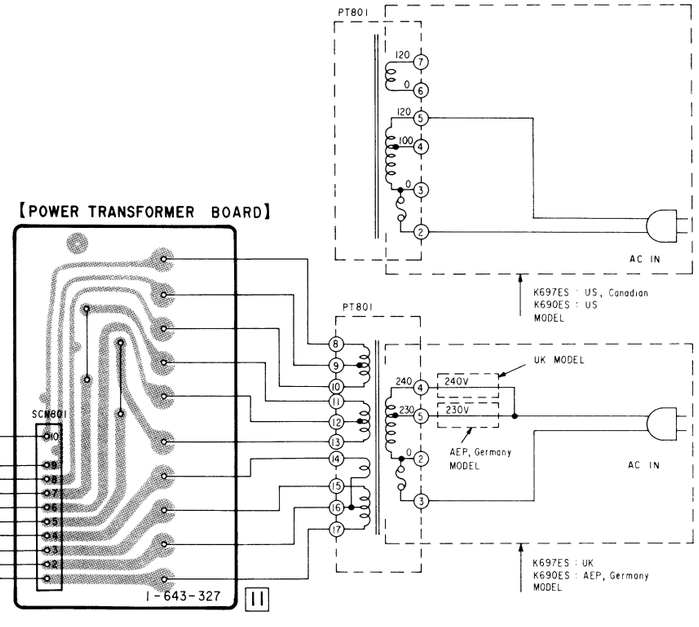

TC-K690ES
HRP1001 REC/PB HEAD
(RED) BLK
WHT
(WHT) BLK
BLK (YEL)
WHT
BLK (BLU)
7
8
15


TC-K697ES
HRP1001 REC/PB HEAD
(RED) BLK
WHT
BLK
(WHT)
BLK (YEL)
(BLU)
WHT
WHT
7
8

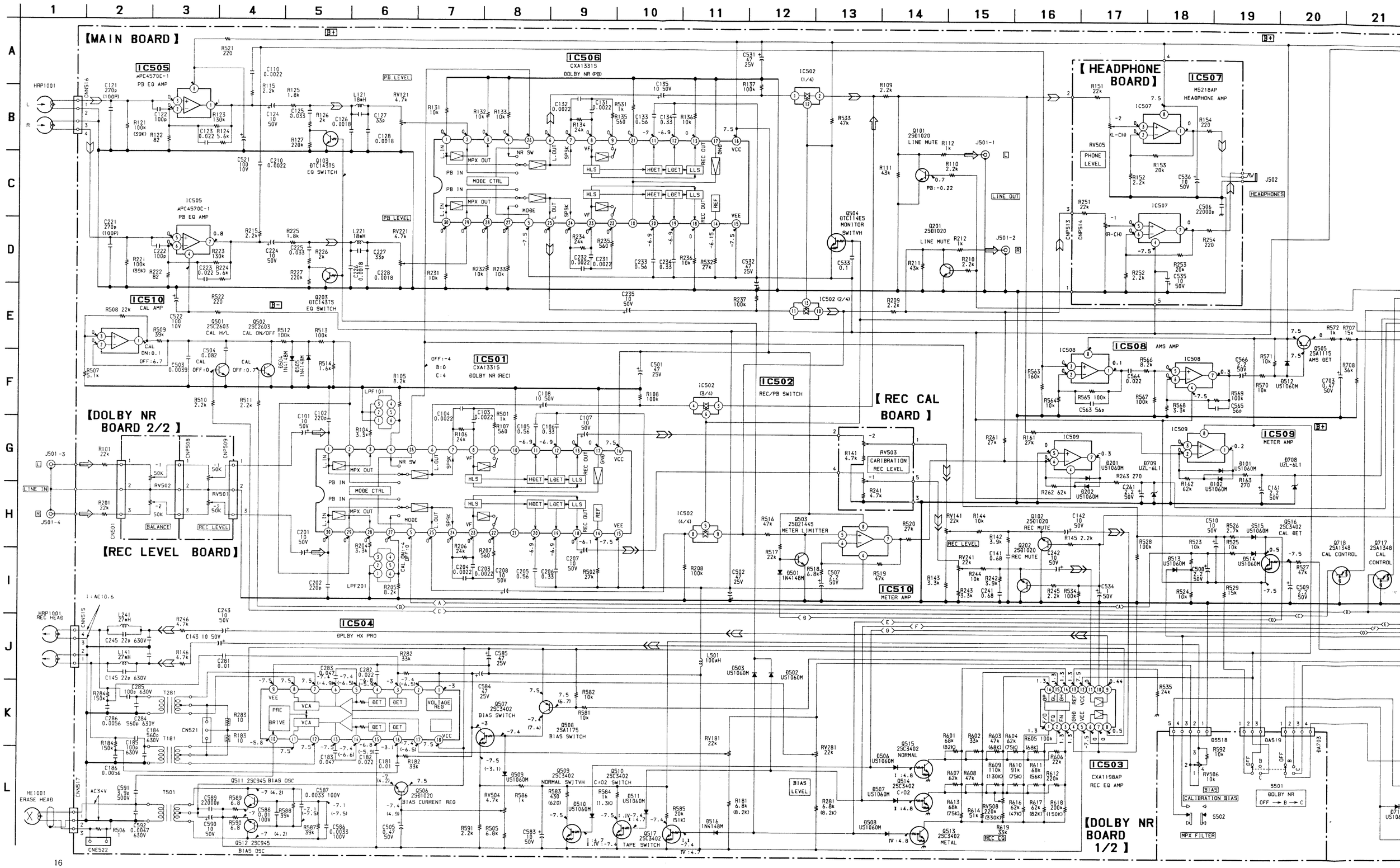

【REC CAL BOARD】
I-643-333
RV503 REC LEVEL
12
【REC LEVEL BOARD】
I-643-333
RV501 REC LEVEL
12


【HEADPHONE BOARD】
C506
J502
HEADPHONES
IC507
C536
R252
R152
CN2514
RV505 PHONE LEVEL
I-643-333
12


【PANEL BOARD】
S701 TIMER
REC
OFF
PLAY
R749
R750
DA802
S801 POWER
OFF
ON
STANDBY
ON
US, Canadian MODEL
UK, AEP, Germany MODEL
I-643-333
12


【POWER TRANSFORMER BOARD】
SCN801
I-643-327
11
PT801
120
100
AC IN
K697ES : US, Canadian
K690ES : US
MODEL
PT801
UK MODEL
240
230
240V
230V
AEP, Germany MODEL
AC IN
K697ES : UK
K690ES : AEP, Germany
MODEL

5-4. SCHEMATIC DIAGRAM •See page 15 for IC Block Diagram.



15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

【HEADPHONE BOARD】

IC507 M5218AP HEADPHONE AMP

R151 22k, R154 220, R153 20k, R152 2.2k, C536 10 50V, RV505 PHONE LEVEL, R112 1k, J501-1, R110 2.2k, LINE OUT, R212 1k, J501-2, R210 2.2k, R251 22k, R253 20k, R252 2.2k, C535 10 50V, C506 22000p, R254 220, J502 HEADPHONES, CNP513, CNP514

【MD BOARD】

IC1002, IC1001, RORTALY ENCORDER, S1004, S1003, S1002, S1005, S1006, S1007, S1008, R1002 180, R1001 180, CN1002, CN1001, CNE701

R716 33k, R717 33k, R719 10k, R712 33k, R713 33k, R714 33k, R715 33k, R745 18k, R746 10k

IC703 REEL MOTOR DRIVE

IC703 BA6219B, IC704 BA6219B, IC704 ASSIST MOTOR DRIVE

Q705 2SA1317 REEL MOTOR SWITCH, Q703 US1060M, R723 1.5k, Q704 US1060M 3.9k, R724, R720 6.8 1/2W, R721 15k, Q705 US1060M, R725 1.5k, R722 15k, R726 12k, R728 5.6 1/2W, R727 6.8k, Q706 2SA1317 ASSIST SWITCH, R736 2.2 1/2W, CN1051, DA1051, C705 0.1, C704 0.1, C1052 10 50V, C1051 10 50V, C1053 0.1, M1052 ASSIST

【REEL MOTOR B

R710 33k, R748, R747, R739 10k, R738 10k, R737 10k, CNE702, R711 51k

X701, R733 1MK, IC701 M50941 SYSTEM CONTROL

VSS, XO, XI, RESET, VSS, SIRCS, POWER-IN, POWER-OUT, OPEN-SW, CLOSE-SW, HALF-SW, MD-UP, MD-DOWN, MD-REV, MD-FWD, MD3.5V, MD3V, CAL, CAL ON/OFF, BIAS, AMS.SIG, S.PULSE, T.PULSE, MECHA SW, METER-R, METER-L, KEY5, KEY6, KEY7, VREF

PAT3, PAT2, PAT1, PAT0, -25V, MONITOR, REC-MUTE, LINE-MUTE, AVCC, VCC

Q710 2SC3402 POWER SWITCH, Q711 2SA1345 SIRCS SWITCH, Q713 2SA1348 POWER SWITCH, R729 33k, R730 33k, R731 4.7k, C708 47 25V, C709 10 50V, C710 0.1, R732 1k, Q709 2SC2603, Q714 2SC2603 RESET

Q707 10E2, Q707 2SA1348 REC MUTE, Q708 2SA1348 LINE MUTE, C707 220 10V, Q716 2SC3399 FL DRIVE, Q715 2SC3399 FL DRIVE

IC508 AMS AMP

R566 8.2k, C566 2.2 50V, R571 10k, Q505 2SA1115 AMS DET, R572 1k, R707 15k, R708 36k, C703 0.47 50V, D512 US1060M, R570 10k, R543 160k, R564 10k, R565 100k, C563 56p, C564 0.022, R567 100k, R568 3.3k, R569 100k, C565 56p

IC509 METER AMP

R261 27k, R161 27k, R262 62k, R263 270, C261 2.2 50V, D201 US1060M, D202 US1060M, D709 UZL-6L1, D708 UZL-6L1, D101 US1060M, D102 US1060M, R162 62k, R163 270, C161 2.2 50V

Q701-704 TAPE SELECT, Q702 2SA1348, Q701 2SA1348, Q704 2SA1348, Q703 2SA1348, Q712 2SC3402, D701 US1060M, C702 1000p, R704 220k, R703 39k, R701 220k, D702 US1060M, R702 220k, R705 39k, R706 220k

Q722 2SA1348 R752 100k TYPE IV :5.4, R753 100k, R754 100k IV :5.4

Q719 2SA1348 HALF SW, Q720 2SA1348 TYPE I, Q721 2SA1348 TYPE II, I :5.4

RV141 22k, R144 10k, Q102 2SD1020 REC MUTE, C142 10 50V, R145 2.2k, REC LEVEL, R142 3.9k, Q202 2SD1020 REC MUTE, RV241 22k, R244 10k, R242 3.9k, R243 3.3k, C241 0.68, C141 0.68, C242 10 50V, R245 2.2k, R534 100k, C534 50V

R528 100k, C510 10 50V, R526 2.7k, R525 10k, C515 US1060M, Q516 2SC3402 CAL DET, R523 10k, D513 US1060M, C508 2.2 50V, D514 US1060M, R524 10k, R529 15k, R527 47k, C509 2.2 50V, Q718 2SA1348 CAL CONTROL, Q717 2SA1348 CAL CONTROL

IC702 MC14069BCP SHAPERTYPE SWITCH

<A> <B> <C> <D> <E> <F>

IC503 CXA1198AP REC EQ AMP

R601 68k (82K), R602 33k, R603 47k (68K), R604 62k (75K), R605 100k (68K), R606 22k, R607 62k, R608 47k, R609 110k (130K), R610 91k (75K), R611 68k (56K), R612 220k, R613 68k (75K), R614 51k, RV508 220k (330K), R616 62k (47K), R617 62k (82K), R618 200k (150K), R619 33k REC EQ, Q513 2SC3402 METAL

【DOLBY NR BOARD 1/2】

R535 24k, DA518, DA519, DA703, R592 10k, RV506 10k BIAS, CALIBRATION BIAS, MPX FILTER, S502, S501 DOLBY NR OFF → B → C

Q723-726 DOLBY/CAL/DISPLAY DRIVE

Q723 2SA1345, Q724 2SA1345, Q726 2SA1345, Q729 2SA1348, Q727 2SA1345 MPX SWITCH, D715 US1060M, R742 100k, Q740 4.7k, D713 US1060M, D712 US1060M, Q725 2SC3402, D714 US1060M, R743 100k, D718 US1060M, R755 100k, R770 100k, R744 100k, CAL ON 5.4, CAL ON -23.7, CAL ON -23.6, CAL ON 1.9, CAL ON 5.4

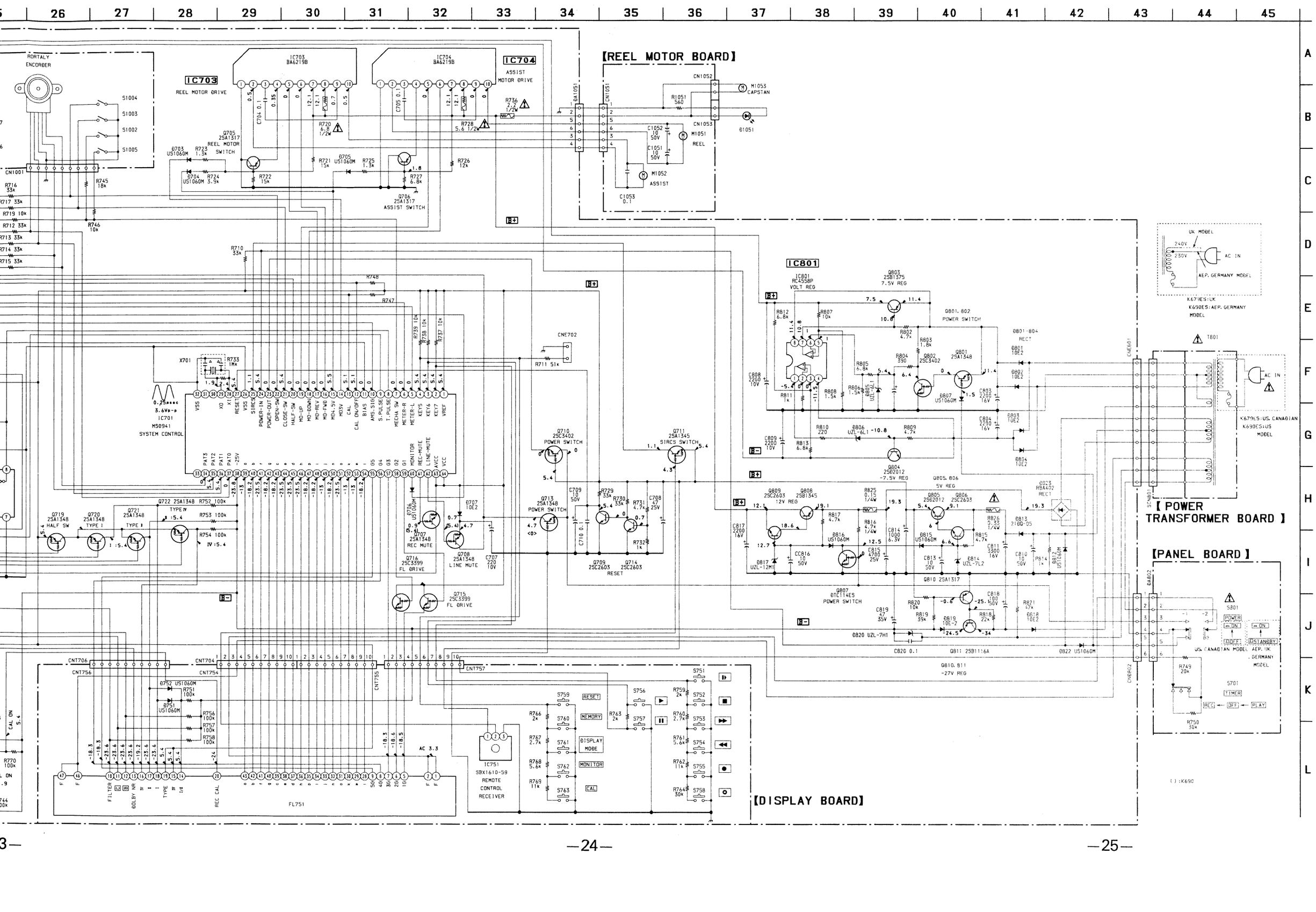
CNT706, CNT756, CNT704, CNT754, CNT755, CNT757

D752 US1060M, D751 US1060M, R751 100k, R756 100k, R757 100k, R758 100k

FILTER, DOLBY NR, REC CAL, FL751

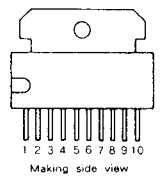
IC751 SBX1610-59 REMOTE CONTROL RECEIVER

S759 RESET, S760 MEMORY, S761 DISPLAY MODE, S762 MONITOR, S763 CAL, S756, S757, R766 2k, R767 2.7k, R768 5.6k, R769 11k, R763 2k, R759 2k, R760 2.7k, R761 5.6k, R762 11k, R764 30k

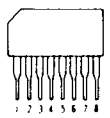

【REEL MOTOR BOARD】
IC703
REEL MOTOR DRIVE
IC704
ASSIST MOTOR DRIVE
IC703 BA6219B
IC704 BA6219B
ROTARY ENCODER
S1004
S1003
S1002
S1005
CN1001
CN1051
CN1052
CN1053
M1053 CAPSTAN
M1051 REEL
M1052 ASSIST
D1051
Q705 2SA1317 REEL MOTOR SWITCH
Q706 2SA1317 ASSIST SWITCH
【POWER TRANSFORMER BOARD】
【PANEL BOARD】
【DISPLAY BOARD】
IC801
IC801 RC4558P VOLT REG
Q803 2SB1375 7.5V REG
Q801, 802 POWER SWITCH
Q804 2SD2012 -7.5V REG
Q805, 806 5V REG
Q807 DTC114ES POWER SWITCH
Q810, 811 -27V REG
Q811 2SB1116A
Q820 UZL-7H1
Q822 US1060M
Q801-804 RECT
Q823 RBA402 RECT
UK MODEL
AEP, GERMANY MODEL
K679ES:UK
K690ES:AEP, GERMANY MODEL
K679ES:US, CANADIAN
K690ES:US MODEL
US, CANADIAN MODEL: AEP, UK, GERMANY MODEL
TB01
CNE801
CNB802
CNT706
CNT704
CNT757
CNT756
CNT754
CNT755
X701
IC701 MS0941 SYSTEM CONTROL
IC751 SBX1610-59 REMOTE CONTROL RECEIVER
FL751
CNE702
Q710 2SC3402 POWER SWITCH
Q711 2SA1345 SIRCS SWITCH
Q713 2SA1348 POWER SWITCH
Q709 2SC2603 RESET
Q714 2SC2603
Q716 2SC3399 FL DRIVE
Q715 2SC3399 FL DRIVE
Q707 2SA1348 REC MUTE
Q708 2SA1348 LINE MUTE
Q719 2SA1348 HALF SW
Q720 2SA1348 TYPE I
Q721 2SA1348 TYPE I
Q722 2SA1348 TYPE IV
RESET
MEMORY
DISPLAY MODE
MONITOR
CAL
S751
S752
S753
S754
S755
S758
S759
S760
S761
S762
S763
S756
S757
S801
POWER
ON
OFF
STANDBY
S5701
TIMER
REC
OFF
PLAY
B+
B-

5-5. SEMICONDUCTOR LEAD LAYOUTS

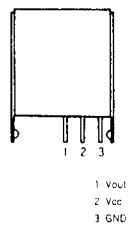
BA6219B
LB1641



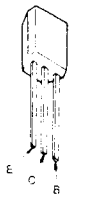
M5218AL



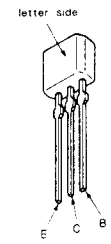
SBX1610-59



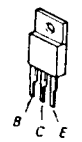
DTA114ES
DTA144ES
DTC114ES
DTC143TS
2SA1317-STU
2SC2603-EF
2SD2144S



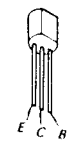
DTC144ES
2SA1175-HFE



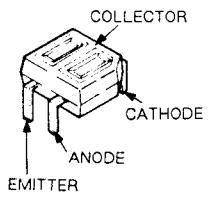
2SB1094-LK
2SD2012



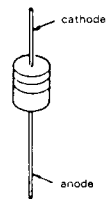
2SB1116A-L
2SC945-P



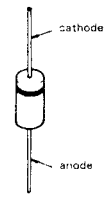
GP2S22B



HZS6A1L
HZS7A1L



1N4148M
10E2N
21DQ05



SECTION 6
EXPLODED VIEWS

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE)...(RED)
  ↑ ↑
  Parts color Cabinet's color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.
- G : Germany model

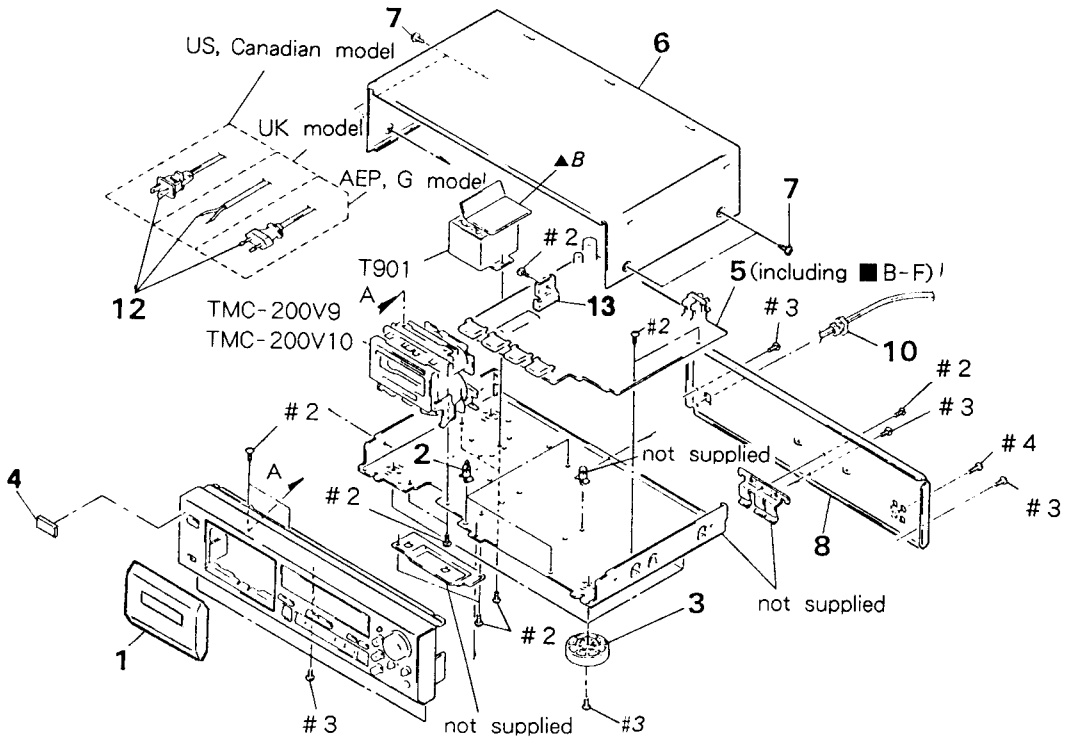
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spéci-fie.

6-1. CHASSIS SECTION

▲B : POWER TRANSFORMER board

■B-F : See next page

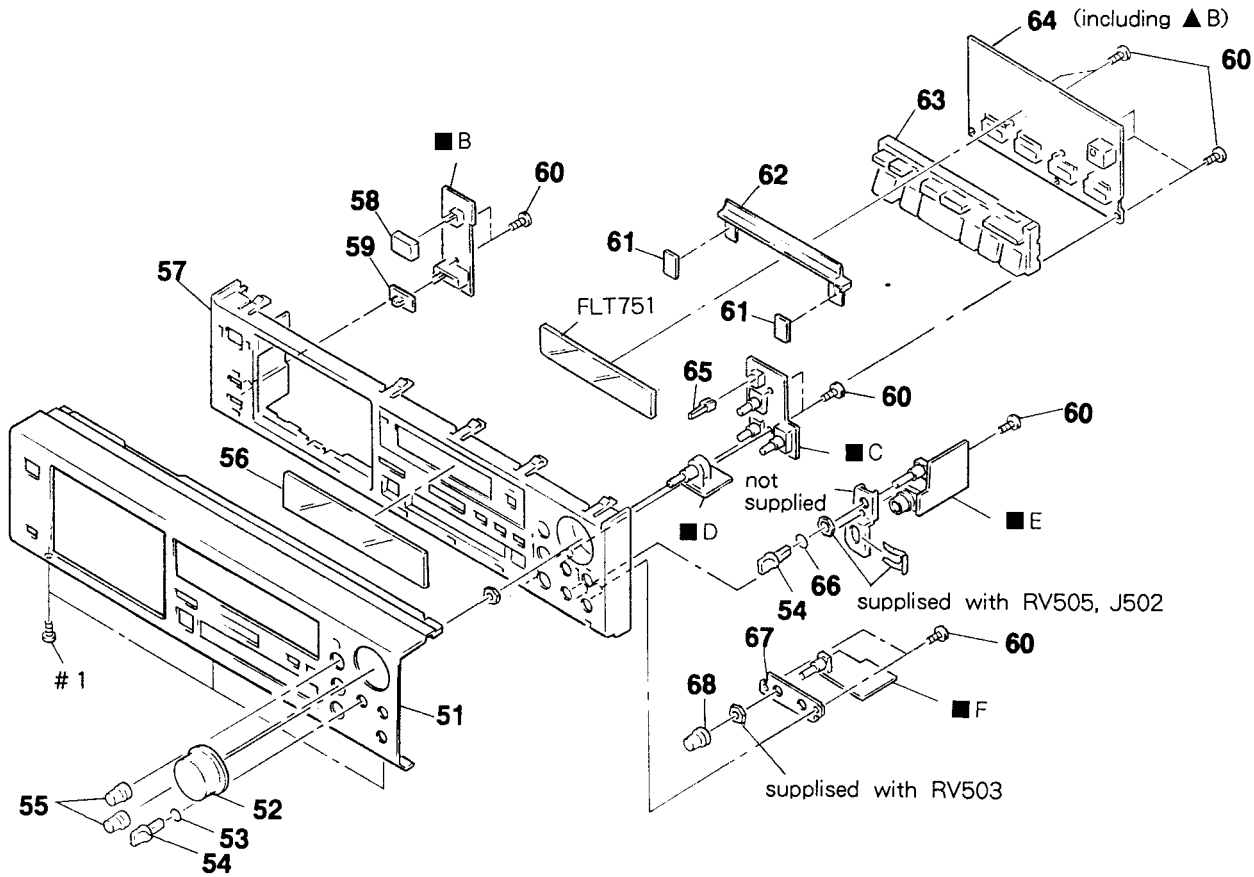


Ref. No.	Part No.	Description	Remarks
1	X-3363-220-1	LID (A) ASSY, CASSETTE (K690:US)	
1	X-3365-066-1	LID ASSY, CASSETTE (K679ES)	
1	X-3365-069-1	LID ASSY, CASSETTE (K690:AEP, Germany)	
* 2	3-346-265-11	HOLDER, PC BOARD	
3	4-943-148-32	FOOT (F58175SW) (K690:US)	
3	4-943-148-42	FOOT (K690:AEP, Germany, K679ES)	
4	4-908-848-01	EMBLEM, SONY	
* 5	A-2006-759-A	MAIN BOARD, COMPLETE (K690)	
* 5	A-2006-772-A	MAIN BOARD, COMPLETE (K679ES)	
6	3-332-578-61	CASE	
7	3-704-366-01	SCREW (CASE) (M3X8)	
* 8	3-375-665-01	PANEL, BACK (K679ES:US, Canadian)	
* 8	3-375-665-11	PANEL, BACK (K679ES:UK)	
* 8	3-375-666-01	PANEL, BACK (K690:AEP, Germany)	
* 8	3-375-666-11	PANEL, BACK (K690:US)	

Ref. No.	Part No.	Description	Remarks
* 8	3-375-666-21	PANEL, BACK (K690:AEP)	
* 10	3-703-244-00	BUSHING (2104), CORD (K679ES:UK /K690:AEP, Germany)	
* 10	3-703-571-11	BUSHING (S) (4516), CORD (K679ES:US, Canadian/K690:US)	
⚠12	1-555-795-00	CORD, POWER, EULO PLUG (K690:AEP, Germany)	
⚠12	1-556-035-00	CORD, POWER (K679ES:UK)	
⚠12	1-558-945-11	CORD, POWER (POLAR. SPT-1) (K679ES:US, Canadian/K690:US)	
* 13	3-356-925-01	HEAT SINK	
⚠T901	1-450-100-11	TRANSFORMER, POWER (K679ES:US, Canadian /K690:US)	
⚠T901	1-450-399-11	TRANSFORMER, POWER (K679ES:UK /K690:AEP, Germany)	

6-2. FRONT PANEL SECTION

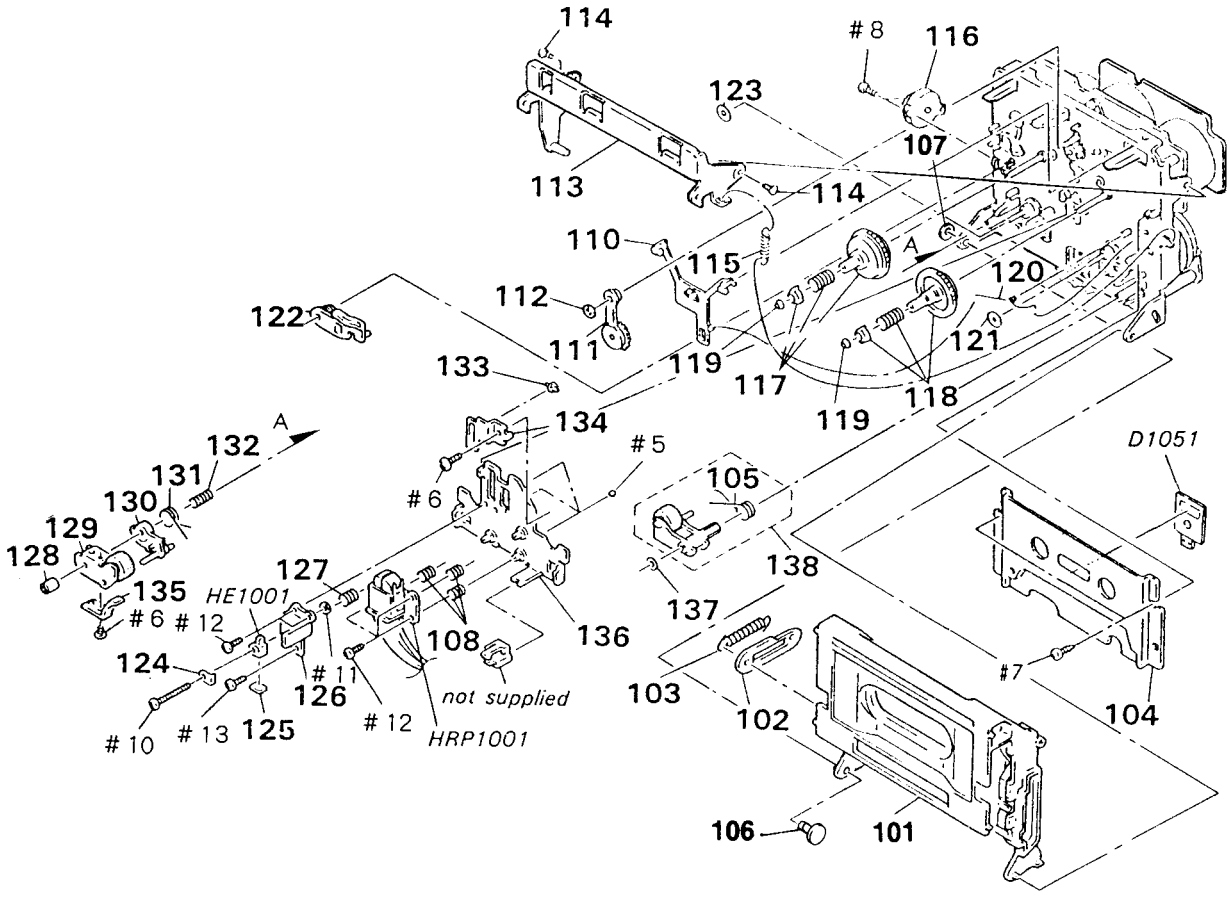
■B : PANEL board
■C : DOLBY NR board
■D : REC LEVEL board
■E : HEADPHONE board
■F : REC CAL board



Ref. No.	Part No.	Description	Remarks
51	3-379-229-01	PANEL, FRONT (K690:AEP, Germany)	
51	3-379-229-11	PANEL, FRONT (K690:US)	
51	3-379-229-41	PANEL, FRONT (K679ES:US, Canadian)	
51	3-379-229-51	PANEL, FRONT (K679ES:UK)	
52	3-367-438-11	KNOB (REC)	
53	3-370-186-01	SPRING (SWPA), RING	
54	3-350-495-01	KNOB (VOL)	
55	3-367-431-01	KNOB (BAL)	
56	3-367-433-11	WINDOW (METER) (K690:US)	
56	3-378-144-11	WINDOW (METER) (K679ES/K690:AEP, Germany)	
57	3-367-440-01	PANEL (BASE)	
58	4-922-921-01	BUTTON (POWER)	

Ref. No.	Part No.	Description	Remarks
59	4-931-421-11	KNOB (T & S)	
60	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
61	9-911-844-XX	CUSHION	
* 62	4-932-502-01	HOLDER, FL TUBE	
63	3-368-281-31	BUTTON (B)	
* 64	1-643-327-11	FL BOARD	
65	3-350-473-01	BUTTON (MPX)	
66	3-356-957-01	SPRING	
* 67	3-368-280-01	BRACKET (C)	
68	3-370-003-01	KNOB (BAL)	
FLT751	1-519-710-11	INDICATOR TUBE, FLUORESCENT	

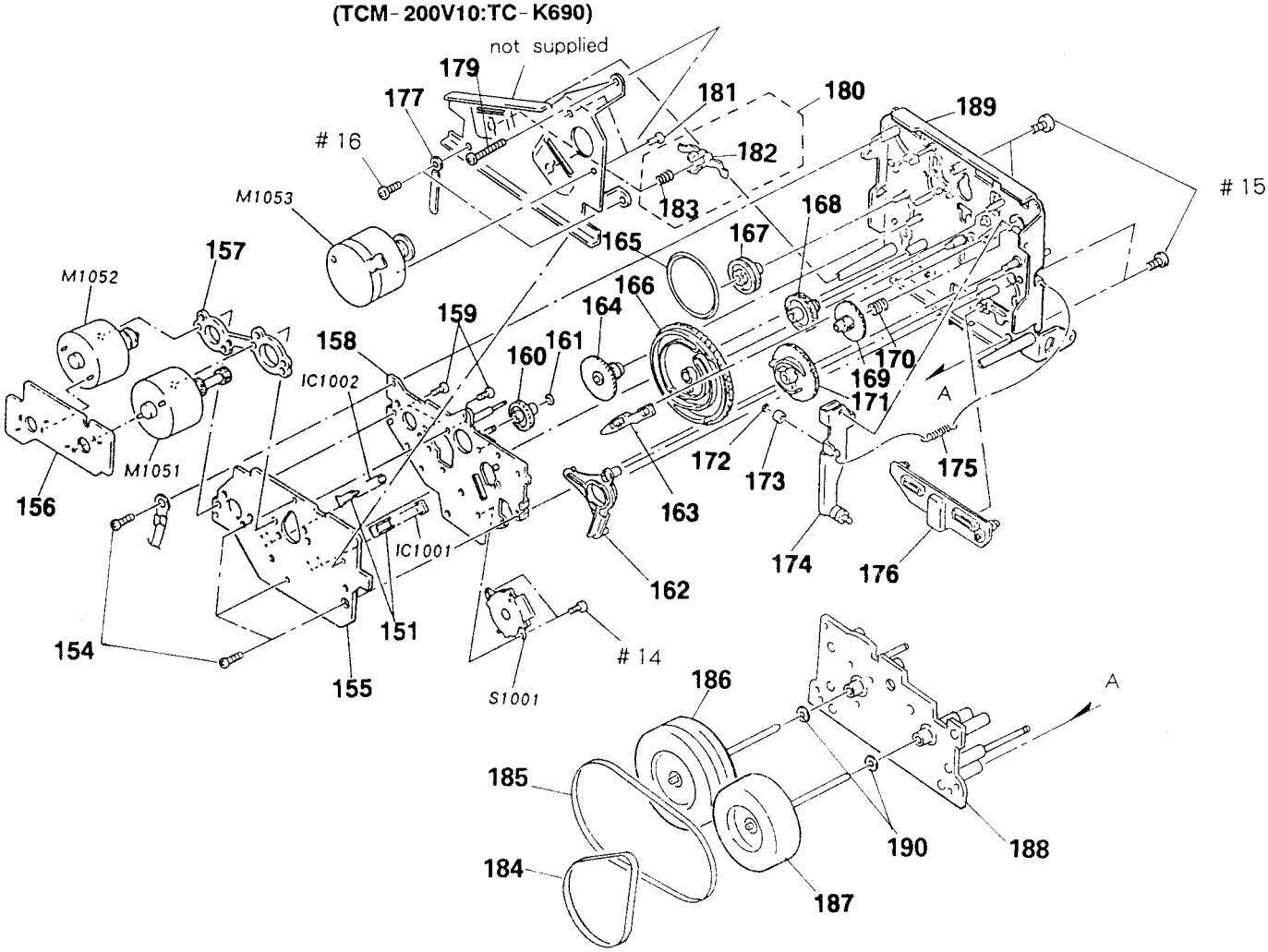
6-3. MECHANISM SECTION 1 (TCM-200V9:TC-K679ES)
(TCM-200V10:TC-K690)



Ref. No.	Part No.	Description	Remarks
101	X-3364-799-1	HOLDER (CD) (2) ASSY, CASSETTE	
* 102	3-356-717-01	LEVER (JOINT)	
103	3-356-626-01	SPRING, TENSION	
104	X-3356-613-1	PLATE ASSY, ORNAMENTAL	
105	3-356-672-01	SPRING (PINCH LEVER T), TORSION	
106	3-378-341-01	SHAFT (L) (CASSETTE HOLDER) (K690)	
107	3-558-708-21	WASHER, STOPPER (K690)	
108	3-356-659-01	SPRING (RPH), COMPRESSION	
110	3-356-614-01	SLIDER (BRAKE)	
111	X-3356-641-1	LEVER (FR2) ASSY	
112	3-669-465-11	WASHER (1.5), STOPPER	
* 113	X-3356-608-1	LEVER (LIFTER) ASSY	
114	3-356-601-11	SCREW, STEP	
115	3-356-625-01	SPRING, TENSION	
116	3-712-786-01	DAMPER, OIL	
117	X-3356-629-1	GEAR (S) ASSY	
118	X-3356-627-1	GEAR (T) ASSY	
119	3-362-308-01	CAP (REEL)	
120	3-356-619-01	SPRING (B), TORSION	
121	3-332-763-01	RING, OIL RESERVOIR	

Ref. No.	Part No.	Description	Remarks
122	X-3356-623-1	LEVER (BT) ASSY	
123	3-356-713-01	WASHER	
124	3-318-433-01	SPRING	
* 125	1-608-268-00	PC BOARD, ERASE HEAD	
* 126	3-576-977-00	BRACKET, E. HEAD	
127	3-564-121-00	SPRING, COMPRESSION	
128	3-356-652-01	NUT (PINCH LEVER S)	
129	X-3356-621-1	LEVER (PINCH LEVER S) ASSY	
130	3-356-660-01	LEVER (PS)	
131	3-356-661-01	SPRING (PINCH LEVER S), TORSION	
132	3-356-657-01	SPRING (PS), COMPRESSION	
133	3-367-775-01	ROLLER (HEAD CHASSIS)	
134	3-356-656-11	SPRING (HEAD PC BOARD), LEAF	
135	3-564-138-00	GUIDE (S), TAPE	
* 136	X-3362-861-1	SLIDER (HEAD CHASSIS V4) ASSY	
137	3-669-596-00	WASHER (2.3), STOPPER	
138	X-3356-620-1	LEVER (PINCH LEVER T) ASSY	
D1051	8-719-980-85	DIODE SLF325C	
HE1001	1-543-836-11	HEAD, MAGNETIC (ERASE)	
HRP1001	1-543-834-11	HEAD, MAGNETIC (REC/PB) (K690)	
HRP1001	1-543-835-11	HEAD, MAGNETIC (REC PB) (K679ES)	

6-4. MECHANISM SECTION 2 (TCM-200V9:TC-K679ES)
(TCM-200V10:TC-K690)



Ref. No.	Part No.	Description	Remarks
151	3-356-631-01	HOLDER (SENSOR)	
154	3-355-801-01	SCREW (BTP 2X18)	
* 155	1-632-740-11	MD BOARD	
* 156	1-632-741-11	REAL MOTOR BOARD	
* 157	3-356-628-01	SPACER (MOTOR)	
* 158	X-3356-616-1	BRACKET (MOTOR D) ASSY	
159	3-363-804-01	SCREW (+P 2.6X6.5)	
160	3-356-702-01	GEAR (COMMUNICATION B)	
161	3-669-465-00	WASHER (1.5), STOPPER	
162	3-356-613-01	LEVER (MODE)	
163	3-356-617-01	LEVER (SELECTION)	
164	3-356-606-01	GEAR (MODE)	
165	3-356-603-01	BELT (MODE)	
166	3-356-747-01	GEAR (MODE CAM C)	
167	3-356-607-01	PULLEY (MODE)	
168	3-356-703-01	GEAR (COMMUNICATION C)	
169	3-356-609-01	GEAR (LOADING)	
170	3-356-605-01	SPRING, COMPRESSION	
171	3-356-616-01	GEAR (LOADING CAM)	
172	3-558-708-11	WASHER, STOPPER	
173	3-356-630-01	ROLLER (LOADING)	
* 174	X-3356-606-1	LEVER (LOADING) ASSY	

Ref. No.	Part No.	Description	Remarks
175	3-376-854-01	SPRING, TENSION	
176	3-356-653-01	SLIDER (PAUSE)	
177	3-703-150-11	STOPPER, WIRING	
179	3-356-707-01	SCREW (+PTPWH 2X25)	
180	X-3365-071-1	RETAINER (V4) ASSY, THRUST	
181	4-885-599-00	SCREW, FITTING, REINFORCEMENT	
182	3-575-321-00	RETAINER, THRUST, CAPSTAN	
183	3-379-310-01	SPRING, COMPRESSION	
184	3-367-774-01	BELT (CAPSTAN V4)	
185	3-364-600-01	BELT (CAPSTAN)	
186	X-3362-863-1	FLYWHEEL (VT) ASSY	
187	X-3362-864-1	FLYWHEEL (VS) ASSY	
* 188	X-3362-865-1	BRACKET (CAPSTAN BASE) ASSY	
* 189	X-3362-862-1	CHASSIS (V4) ASSY, MECHANICAL	
190	3-356-705-31	WASHER (CAPSTAN)	
M1051	X-3356-638-1	MOTOR (REEL R) ASSY	
M1052	X-3356-604-1	MOTOR (ASSIST) ASSY	
M1053	X-3356-635-1	MOTOR (CAPSTAN R2) ASSY	
S1001	1-466-238-11	ENCORDER, ROTARY	
IC1001	8-749-920-97	DIODE GP2S22B	
IC1002	8-749-920-97	DIODE GP2S22B	

SECTION 7
ELECTRICAL PARTS LIST

FL MD

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS :
  uF : μF
- RESISTORS
  All resistors are in ohms.
  METAL : metal-film resistor
  METAL OXIDE : Metal Oxide-film resistor
  F : nonflammable
- COILS
  uH : μH
- SEMICONDUCTORS
  In each case, u : μ, for example :
  uA... : μA... , uPA... , μPA... ,
  uPB... , μPB... , uPC... , μPC... ,
  uPD..., μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description			Remarks
*	1-643-327-11	FL BOARD			
		********			
	9-911-844-XX	CUSHION			
*	4-932-502-01	HOLDER, FL TUBE			
		< CONNECTOR >			
* CNT704	1-580-782-11	CONNECTOR, BOARD TO BOARD			
* CNT705	1-580-782-11	CONNECTOR, BOARD TO BOARD			
* CNT706	1-580-782-11	CONNECTOR, BOARD TO BOARD			
* CNT707	1-580-782-11	CONNECTOR, BOARD TO BOARD			
		< CAPACITOR >			
C751	1-126-022-11	ELECT	47uF	20% 25V	
		< DIODE >			
D751	8-719-987-63	DIODE	1N4148M		
D752	8-719-987-63	DIODE	1N4148M		
		< FILTER >			
FLT751	1-519-710-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC751	8-741-100-48	IC	SBX1610-59		
		< RESISTOR >			
R751	1-249-441-11	CARBON	100K	5% 1/4W	
R756	1-249-441-11	CARBON	100K	5% 1/4W	
R757	1-249-441-11	CARBON	100K	5% 1/4W	
R758	1-249-441-11	CARBON	100K	5% 1/4W	
R759	1-247-838-00	CARBON	2K	5% 1/4W	
R760	1-249-422-11	CARBON	2.7K	5% 1/4W	
R761	1-249-426-11	CARBON	5.6K	5% 1/4W	
R762	1-247-856-00	CARBON	11K	5% 1/4W	
R763	1-247-838-00	CARBON	2K	5% 1/4W	
R764	1-247-866-11	CARBON	30K	5% 1/4W	
R766	1-247-838-00	CARBON	2K	5% 1/4W	
R767	1-249-422-11	CARBON	2.7K	5% 1/4W	
R768	1-249-426-11	CARBON	5.6K	5% 1/4W	
R769	1-247-856-00	CARBON	11K	5% 1/4W	
		< SWITCH >			
S751	1-554-303-21	SWITCH, TACTILE (▲)			
S752	1-554-303-21	SWITCH, TACTILE (■)			
S753	1-554-303-21	SWITCH, TACTILE (REW)			
S754	1-554-303-21	SWITCH, TACTILE (FF)			
S755	1-554-303-21	SWITCH, TACTILE (●)			
S756	1-554-303-21	SWITCH, TACTILE (▶)			
S757	1-554-303-21	SWITCH, TACTILE (▮▮)			
S758	1-554-303-21	SWITCH, TACTILE (⏺)			
S759	1-554-303-21	SWITCH, TACTILE (RESET)			
S760	1-554-303-21	SWITCH, TACTILE (MEMORY)			
S761	1-554-303-21	SWITCH, TACTILE (DISPLAY)			
S762	1-554-303-21	SWITCH, TACTILE (MONITOR)			
S763	1-554-303-21	SWITCH, TACTILE (CAL)			
**********					
*	1-632-740-11	MD BOARD			
		********			
	3-356-631-01	HOLDER (SENSOR)			
		< CONNECTOR >			
CN1001	1-506-615-11	PIN, CONNECTOR 9P			
CN1002	1-564-501-11	PIN, CONNECTOR 8P			
		< IC >			
IC1001	8-749-920-97	DIODE	GP2S22B		
IC1002	8-749-920-97	DIODE	GP2S22B		

MD MAIN

Ref. No.	Part No.	Description			Remarks
		< RESISTOR >			
R1001	1-249-408-11	CARBON	180	5% 1/4W	
R1002	1-249-408-11	CARBON	180	5% 1/4W	
		< SWITCH >			
S1002	1-570-953-11	SWITCH, PUSH (1 KEY) (DOOR)			
S1003	1-571-958-11	SWITCH, PUSH (1 KEY) (CLOSE)			
S1004	1-572-126-11	SWITCH, PUSH (1 KEY) (OPEN)			
S1005	1-572-125-11	SWITCH, LEAF (FWD)			
S1006	1-572-202-11	SWITCH, LEAF (HALF)			
S1007	1-572-125-11	SWITCH, LEAF (METAL)			
S1008	1-572-125-11	SWITCH, LEAF (70uS)			
		< TERMINAL >			
* TB1001	1-694-018-11	TERMINAL (5P)			
**********					
*	A-2006-772-A	MAIN BOARD, COMPLETE (K679ES)			
		**********			
*	A-2006-759-A	MAIN BOARD, COMPLETE (K690)			
		**********			
*	1-562-327-00	SOCKET, CONNECTOR 3P			
*	1-690-880-31	READ (WITH CONNECTOR)			
*	3-356-925-01	HEAT SINK			
	7-682-547-04	SCREW +BVTT 3X6 (S)			
		< CAPACITOR >			
C101	1-126-059-11	ELECT	10uF	20% 50V	
C102	1-162-286-31	CERAMIC	220PF	10% 50V	
C103	1-130-475-00	MYLAR	0.0022uF	5% 50V	
C104	1-130-475-00	MYLAR	0.0022uF	5% 50V	
C105	1-136-174-00	FILM	0.56uF	5% 50V	
C106	1-136-171-00	FILM	0.33uF	5% 50V	
C107	1-126-059-11	ELECT	10uF	20% 50V	
C108	1-124-657-00	ELECT	10uF	20% 50V	
C110	1-161-494-00	CERAMIC	0.022uF	25V	
C121	1-110-335-11	MYLAR	100PF	5% 50V	(K679ES)
C121	1-110-340-11	MYLAR	270PF	5% 50V	(K690)
C122	1-162-282-31	CERAMIC	100PF	10% 50V	
C123	1-130-487-00	MYLAR	0.022uF	5% 50V	
C124	1-124-657-00	ELECT	10uF	20% 50V	
C125	1-130-488-00	MYLAR	0.027uF	5% 50V	
C126	1-130-474-00	MYLAR	0.0018uF	5% 50V	
C127	1-102-518-11	CERAMIC	33PF	5% 50V	
C128	1-130-474-00	MYLAR	0.0018uF	5% 50V	
C131	1-130-475-00	MYLAR	0.0022uF	5% 50V	

Ref. No.	Part No.	Description			Remarks
C132	1-130-475-00	MYLAR	0.0022uF	5% 50V	
C133	1-136-174-00	FILM	0.56uF	5% 50V	
C134	1-136-171-00	FILM	0.33uF	5% 50V	
C135	1-124-657-00	ELECT	10uF	20% 50V	
C141	1-136-175-00	FILM	0.68uF	5% 50V	
C142	1-126-059-11	ELECT	10uF	20% 50V	
C143	1-126-059-11	ELECT	10uF	20% 50V	
C144	1-110-338-51	MYLAR	180PF	5% 50V	
C145	1-136-935-11	FILM	22PF	5% 630V	
C161	1-124-925-11	ELECT	2.2uF	20% 100V	
C181	1-136-153-00	FILM	0.01uF	5% 50V	
C182	1-136-157-00	FILM	0.022uF	5% 50V	
C183	1-136-161-00	FILM	0.047uF	5% 50V	
C184	1-136-803-11	FILM	560PF	5% 630V	
C185	1-136-433-11	FILM	100PF	5% 630V	
C186	1-130-468-00	MYLAR	560PF	5% 50V	
C201	1-126-059-11	ELECT	10uF	20% 50V	
C202	1-162-286-31	CERAMIC	220PF	10% 50V	
C203	1-130-475-00	MYLAR	0.0022uF	5% 50V	
C204	1-130-475-00	MYLAR	0.0022uF	5% 50V	
C205	1-136-174-00	FILM	0.56uF	5% 50V	
C206	1-136-171-00	FILM	0.33uF	5% 50V	
C207	1-126-059-11	ELECT	10uF	20% 50V	
C208	1-124-657-00	ELECT	10uF	20% 50V	
C210	1-161-494-00	CERAMIC	0.022uF	25V	
C221	1-110-335-11	MYLAR	100PF	5% 50V	(K679ES)
C221	1-110-340-11	MYLAR	270PF	5% 50V	(K690)
C222	1-162-282-31	CERAMIC	100PF	10% 50V	
C223	1-130-487-00	MYLAR	0.022uF	5% 50V	
C224	1-124-657-00	ELECT	10uF	20% 50V	
C225	1-130-488-00	MYLAR	0.027uF	5% 50V	
C226	1-130-474-00	MYLAR	0.0018uF	5% 50V	
C227	1-102-518-11	CERAMIC	33PF	5% 50V	
C228	1-130-474-00	MYLAR	0.0018uF	5% 50V	
C231	1-130-475-00	MYLAR	0.0022uF	5% 50V	
C232	1-130-475-00	MYLAR	0.0022uF	5% 50V	
C233	1-136-174-00	FILM	0.56uF	5% 50V	
C234	1-136-171-00	FILM	0.33uF	5% 50V	
C235	1-124-657-00	ELECT	10uF	20% 50V	
C241	1-136-175-00	FILM	0.68uF	5% 50V	
C242	1-126-059-11	ELECT	10uF	20% 50V	
C243	1-126-059-11	ELECT	10uF	20% 50V	
C244	1-110-338-51	MYLAR	180PF	5% 50V	
C245	1-136-935-11	FILM	22PF	5% 630V	
C261	1-124-925-11	ELECT	2.2uF	20% 100V	
C281	1-136-153-00	FILM	0.01uF	5% 50V	
C282	1-136-157-00	FILM	0.022uF	5% 50V	

Ref. No.	Part No.	Description			Remarks
C283	1-136-161-00	FILM	0.047uF	5%	50V
C284	1-136-803-11	FILM	560PF	5%	630V
C285	1-136-433-11	FILM	100PF	5%	630V
C286	1-130-468-00	MYLAR	560PF	5%	50V
C501	1-126-022-11	ELECT	47uF	20%	25V
C502	1-126-022-11	ELECT	47uF	20%	25V
C503	1-130-478-00	MYLAR	0.0039uF	5%	50V
C504	1-136-164-00	FILM	0.082uF	5%	50V
C505	1-124-902-00	ELECT	0.47uF	20%	50V
C506	1-161-494-00	CERAMIC	0.022uF		25V
C507	1-124-925-11	ELECT	2.2uF	20%	100V
C508	1-124-925-11	ELECT	2.2uF	20%	100V
C509	1-124-925-11	ELECT	2.2uF	20%	100V
C510	1-124-907-11	ELECT	10uF	20%	50V
C521	1-124-994-11	ELECT	100uF	20%	10V
C522	1-124-994-11	ELECT	100uF	20%	10V
C531	1-126-022-11	ELECT	47uF	20%	25V
C532	1-126-022-11	ELECT	47uF	20%	25V
C533	1-164-159-11	CERAMIC	0.1uF		50V
C534	1-124-903-11	ELECT	1uF	20%	50V
C535	1-124-907-11	ELECT	10uF	20%	50V
C536	1-124-907-11	ELECT	10uF	20%	50V
C537	1-136-174-00	ELECT	0.56uF	5%	50V
C538	1-136-174-00	ELECT	0.56uF	5%	50V
C563	1-162-217-31	CERAMIC	56PF	5%	50V
C564	1-136-157-00	FILM	0.022uF	5%	50V
C565	1-162-217-31	CERAMIC	56PF	5%	50V
C566	1-124-925-11	ELECT	2.2uF	20%	100V
C583	1-124-907-11	ELECT	10uF	20%	50V
C584	1-124-477-11	ELECT	47uF	20%	25V
C585	1-124-477-11	ELECT	47uF	20%	25V
C586	1-136-593-11	FILM	0.0033uF	5%	100V
C587	1-136-593-11	FILM	0.0033uF	5%	100V
C588	1-130-955-00	FILM	0.01uF	5%	100V
C589	1-161-494-00	CERAMIC	0.022uF		25V
C590	1-124-907-11	ELECT	10uF	20%	50V
C591	1-107-045-00	MICA	3.9PF		500V
C592	1-136-559-11	FILM	0.0047uF	5%	630V
C701	1-162-294-31	CERAMIC	0.001uF	10%	50V
C702	1-162-294-31	CERAMIC	0.001uF	10%	50V
C703	1-124-902-00	ELECT	0.47uF	20%	50V
C704	1-164-159-11	CERAMIC	0.1uF		50V
C705	1-164-159-11	CERAMIC	0.1uF		50V
C707	1-126-923-11	ELECT	220uF	20%	10V
C708	1-124-477-11	ELECT	47uF	20%	25V
C709	1-124-907-11	ELECT	10uF	20%	50V
C710	1-164-159-11	CERAMIC	0.1uF		50V
C711	1-164-159-11	CERAMIC	0.1uF		50V
C712	1-164-159-11	CERAMIC	0.1uF		50V

Ref. No.	Part No.	Description			Remarks
C803	1-124-556-11	ELECT	2200uF	20%	16V
C804	1-124-556-11	ELECT	2200uF	20%	16V
C806	1-124-477-11	ELECT	47uF	20%	25V
C808	1-124-999-11	ELECT	2200uF	20%	10V
C809	1-124-999-11	ELECT	2200uF	20%	10V
C810	1-124-907-11	ELECT	10uF	20%	50V
C811	1-126-936-11	ELECT	3300uF	20%	16V
C813	1-124-907-11	ELECT	10uF	20%	50V
C814	1-126-916-11	ELECT	1000uF	20%	6.3V
C815	1-124-564-11	ELECT	4700uF	20%	25V
C816	1-124-907-11	ELECT	10uF	20%	50V
C817	1-126-768-11	ELECT	2200uF	20%	16V
C818	1-124-122-11	ELECT	100uF	20%	50V
C819	1-126-947-11	ELECT	47uF	20%	35V
C820	1-164-159-11	CERAMIC	0.1uF		50V

< CONNECTOR >

* CND518	1-564-339-00	PIN, CONNECTOR 5P
* CND519	1-564-337-61	PIN, CONNECTOR 3P
* CND703	1-564-338-71	PIN, CONNECTOR 4P
* CND802	1-564-340-00	PIN, CONNECTOR 6P
* CNE512	1-564-508-11	PLUG, CONNECTOR 5P
* CNE521	1-564-506-11	PLUG, CONNECTOR 3P
* CNE522	1-564-505-11	PLUG, CONNECTOR 2P
* CNE701	1-564-506-11	PLUG, CONNECTOR 3P
* CNE702	1-564-505-11	PLUG, CONNECTOR 2P
* CNE801	1-564-513-11	PLUG, CONNECTOR 10P
* CNN515	1-560-062-00	PIN, CONNECTOR 4P
* CNN516	1-560-062-00	PIN, CONNECTOR 4P
* CNN517	1-560-061-00	PIN, CONNECTOR 3P
* CNP501	1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P
* CNP508	1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P
* CNP509	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P
* CNP510	1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P
* CNP513	1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P
* CNP514	1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P
* CNT704	1-580-784-11	CONNECTOR, BOARD TO BOARD
* CNT705	1-580-784-11	CONNECTOR, BOARD TO BOARD
* CNT706	1-580-784-11	CONNECTOR, BOARD TO BOARD
* CNT707	1-580-784-11	CONNECTOR, BOARD TO BOARD

< DIODE >

D101	8-719-987-63	DIODE 1N4148M
D102	8-719-987-63	DIODE 1N4148M
D201	8-719-987-63	DIODE 1N4148M
D202	8-719-987-63	DIODE 1N4148M
D501	8-719-987-63	DIODE 1N4148M
D502	8-719-987-63	DIODE 1N4148M
D503	8-719-987-63	DIODE 1N4148M

MAIN

Ref. No.	Part No.	Description	Remarks
D504	8-719-987-63	DIODE 1N4148M	
D505	8-719-987-63	DIODE 1N4148M	
D506	8-719-987-63	DIODE 1N4148M	
D507	8-719-987-63	DIODE 1N4148M	
D508	8-719-987-63	DIODE 1N4148M	
D509	8-719-987-63	DIODE 1N4148M	
D510	8-719-987-63	DIODE 1N4148M	
D511	8-719-987-63	DIODE 1N4148M	
D512	8-719-987-63	DIODE 1N4148M	
D513	8-719-987-63	DIODE 1N4148M	
D514	8-719-987-63	DIODE 1N4148M	
D515	8-719-987-63	DIODE 1N4148M	
D516	8-719-987-63	DIODE 1N4148M	
D701	8-719-987-63	DIODE 1N4148M	
D702	8-719-987-63	DIODE 1N4148M	
D703	8-719-987-63	DIODE 1N4148M	
D704	8-719-987-63	DIODE 1N4148M	
D705	8-719-987-63	DIODE 1N4148M	
D706	8-719-987-63	DIODE 1N4148M	
D707	8-719-200-77	DIODE 10E2N	
D708	8-719-933-33	DIODE HZS6A1L	
D709	8-719-933-33	DIODE HZS6A1L	
D712	8-719-987-63	DIODE 1N4148M	
D713	8-719-987-63	DIODE 1N4148M	
D714	8-719-987-63	DIODE 1N4148M	
D715	8-719-987-63	DIODE 1N4148M	
D718	8-719-987-63	DIODE 1N4148M	
D801	8-719-200-77	DIODE 10E2N	
D802	8-719-200-77	DIODE 10E2N	
D803	8-719-200-77	DIODE 10E2N	
D804	8-719-200-77	DIODE 10E2N	
D805	8-719-933-33	DIODE HZS6A1L	
D806	8-719-933-33	DIODE HZS6A1L	
D807	8-719-987-63	DIODE 1N4148M	
D812	8-719-987-63	DIODE 1N4148M	
D813	8-719-200-31	DIODE 21DQ05	
D814	8-719-000-78	DIODE HZS7A1L	
D815	8-719-987-63	DIODE 1N4148M	
D816	8-719-987-63	DIODE 1N4148M	
D817	8-719-001-70	DIODE UZL-12M1	
D818	8-719-200-77	DIODE 10E2N	
D819	8-719-200-77	DIODE 10E2N	
D820	8-719-000-93	DIODE UZL-7H1	
D822	8-719-987-63	DIODE 1N4148M	
D823	8-719-312-09	DIODE RBA-402	

< IC >

IC501	8-752-059-55	IC CXA1331S	
IC502	8-759-000-49	IC TC4069UBP	
IC503	8-752-060-64	IC CXA1198AP	
IC504	8-759-106-56	IC uPC1297CA	
IC505	8-759-111-44	IC uPC4570C-1	
IC506	8-752-059-55	IC CXA1331S	
IC507	8-759-634-51	IC M5218AP	
IC508	8-759-945-58	IC RC4558P	
IC509	8-759-945-58	IC RC4558P	
IC510	8-759-634-50	IC M5218AL	
IC701	8-759-060-83	IC M50941-712SP	
IC702	8-759-240-69	IC TC4069UBP	
IC703	8-759-973-95	IC BA6219B	
IC704	8-759-822-09	IC LB1641	
IC801	8-759-945-58	IC RC4558P	

< JACK >

J501	1-573-070-11	JACK, PIN 4P (LINE) (K679ES)	
J501	1-565-258-11	JACK, PIN 4P (LINE) (K690)	
J502	1-507-796-71	JACK (HEADPHONES)	

< COIL >

L121	1-410-778-11	INDUCTOR 18mH	
L141	1-410-780-11	INDUCTOR 27mH	
L221	1-410-778-11	INDUCTOR 18mH	
L241	1-410-780-11	INDUCTOR 27mH	
L501	1-408-080-00	INDUCTOR 100uH	

< FILTER >

LPF101	1-236-147-11	FILTER, LOW PASS	
LPF201	1-236-147-11	FILTER, LOW PASS	

< TRANSISTOR >

Q101	8-729-142-25	TRANSISTOR 2SD1020-HFE	
Q102	8-729-142-25	TRANSISTOR 2SD1020-HFE	
Q103	8-729-900-74	TRANSISTOR DTC143TS	
Q201	8-729-142-25	TRANSISTOR 2SD1020-HFE	
Q202	8-729-142-25	TRANSISTOR 2SD1020-HFE	
Q203	8-729-900-74	TRANSISTOR DTC143TS	
Q501	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q502	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q503	8-729-922-37	TRANSISTOR 2SD2144S	
Q504	8-729-900-80	TRANSISTOR DTC114ES	
Q505	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q506	8-729-142-25	TRANSISTOR 2SD1020-HFE	
Q507	8-729-900-80	TRANSISTOR DTC114ES	
Q508	8-729-821-04	TRANSISTOR 2SA1317-STU	
Q509	8-729-900-80	TRANSISTOR DTC114ES	
Q510	8-729-900-80	TRANSISTOR DTC114ES	
Q511	8-729-194-57	TRANSISTOR 2SC945-P	
Q512	8-729-194-57	TRANSISTOR 2SC945-P	

Ref. No.	Part No.	Description	Remarks
Q513	8-729-900-80	TRANSISTOR DTC114ES	
Q514	8-729-900-80	TRANSISTOR DTC114ES	
Q515	8-729-900-80	TRANSISTOR DTC114ES	
Q516	8-729-900-80	TRANSISTOR DTC114ES	
Q517	8-729-900-80	TRANSISTOR DTC114ES	
Q701	8-729-900-61	TRANSISTOR DTA114ES	
Q702	8-729-900-61	TRANSISTOR DTA114ES	
Q703	8-729-900-61	TRANSISTOR DTA114ES	
Q704	8-729-900-61	TRANSISTOR DTA114ES	
Q705	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q706	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q707	8-729-900-61	TRANSISTOR DTA114ES	
Q708	8-729-900-61	TRANSISTOR DTA114ES	
Q709	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q710	8-729-900-80	TRANSISTOR DTC114ES	
Q711	8-729-900-65	TRANSISTOR DTA144ES	
Q712	8-729-900-80	TRANSISTOR DTC114ES	
Q713	8-729-900-65	TRANSISTOR DTA144ES	
Q714	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q715	8-729-900-89	TRANSISTOR DTC144ES	
Q716	8-729-900-89	TRANSISTOR DTC144ES	
Q717	8-729-900-61	TRANSISTOR DTA114ES	
Q718	8-729-900-61	TRANSISTOR DTA114ES	
Q719	8-729-900-61	TRANSISTOR DTA114ES	
Q720	8-729-900-61	TRANSISTOR DTA114ES	
Q721	8-729-900-61	TRANSISTOR DTA114ES	
Q722	8-729-900-61	TRANSISTOR DTA114ES	
Q723	8-729-900-65	TRANSISTOR DTA144ES	
Q724	8-729-900-65	TRANSISTOR DTA144ES	
Q725	8-729-900-80	TRANSISTOR DTC114ES	
Q726	8-729-900-65	TRANSISTOR DTA144ES	
Q727	8-729-900-65	TRANSISTOR DTA144ES	
Q729	8-729-900-61	TRANSISTOR DTA114ES	
Q801	8-729-900-61	TRANSISTOR DTA114ES	
Q802	8-729-900-80	TRANSISTOR DTC114ES	
Q803	8-729-141-83	TRANSISTOR 2SB1094-LK	
Q804	8-729-209-15	TRANSISTOR 2SD2012	
Q805	8-729-209-15	TRANSISTOR 2SD2012	
Q806	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q807	8-729-900-80	TRANSISTOR DTC114ES	
Q808	8-729-141-83	TRANSISTOR 2SB1094-LK	
Q809	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q810	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q811	8-729-140-04	TRANSISTOR 2SB1116A-L	

< RESISTOR >

R101	1-259-460-11	CARBON	22K	5%	1/6W
R104	1-259-440-11	CARBON	3.3K	5%	1/6W
R105	1-259-450-11	CARBON	8.2K	5%	1/6W
R106	1-259-461-11	CARBON	24K	5%	1/6W
R107	1-259-422-11	CARBON	560	5%	1/6W
R108	1-259-476-11	CARBON	100K	5%	1/6W
R109	1-259-436-11	CARBON	2.2K	5%	1/6W
R110	1-249-421-11	CARBON	2.2K	5%	1/4W
R111	1-259-467-11	CARBON	43K	5%	1/6W
R112	1-259-428-11	CARBON	1K	5%	1/6W
R115	1-249-421-11	CARBON	2.2K	5%	1/4W
R121	1-259-466-11	CARBON	39K	5%	1/6W(K679ES)
R121	1-259-476-11	CARBON	100K	5%	1/6W(K690)
R122	1-259-402-11	CARBON	82	5%	1/6W
R123	1-259-479-11	CARBON	130K	5%	1/6W
R124	1-259-446-11	CARBON	5.6K	5%	1/6W
R125	1-259-434-11	CARBON	1.8K	5%	1/6W
R126	1-259-435-11	CARBON	2K	5%	1/6W
R127	1-259-484-11	CARBON	220K	5%	1/6W
R131	1-249-429-11	CARBON	10K	5%	1/4W
R132	1-249-429-11	CARBON	10K	5%	1/4W
R133	1-249-429-11	CARBON	10K	5%	1/4W
R134	1-259-461-11	CARBON	24K	5%	1/6W
R135	1-259-422-11	CARBON	560	5%	1/6W
R136	1-259-452-11	CARBON	10K	5%	1/6W
R137	1-259-476-11	CARBON	100K	5%	1/6W
R141	1-259-444-11	CARBON	4.7K	5%	1/6W
R142	1-259-442-11	CARBON	3.9K	5%	1/6W
R143	1-259-440-11	CARBON	3.3K	5%	1/6W
R144	1-259-452-11	CARBON	10K	5%	1/6W
R145	1-249-421-11	CARBON	2.2K	5%	1/4W
R146	1-259-444-11	CARBON	4.7K	5%	1/6W
R151	1-249-433-11	CARBON	22K	5%	1/4W
R152	1-249-421-11	CARBON	2.2K	5%	1/4W
R153	1-247-862-11	CARBON	20K	5%	1/4W
R154	1-249-409-11	CARBON	220	5%	1/4W
R161	1-249-434-11	CARBON	27K	5%	1/4W
R162	1-247-874-11	CARBON	62K	5%	1/4W
R163	1-249-410-11	CARBON	270	5%	1/4W
R181	1-249-428-11	CARBON	8.2K	5%	1/4W(K679ES)
R181	1-249-427-11	CARBON	6.8K	5%	1/4W(K690)
R182	1-249-435-11	CARBON	33K	5%	1/4W
⚠R183	1-219-153-11	FUSIBLE	10	5%	1/4W F
R184	1-247-883-00	CARBON	150K	5%	1/4W
R201	1-259-460-11	CARBON	22K	5%	1/6W
R204	1-259-440-11	CARBON	3.3K	5%	1/6W
R205	1-259-450-11	CARBON	8.2K	5%	1/6W
R206	1-259-461-11	CARBON	24K	5%	1/6W
R207	1-259-422-11	CARBON	560	5%	1/6W
R208	1-259-476-11	CARBON	100K	5%	1/6W
R209	1-259-436-11	CARBON	2.2K	5%	1/6W
R210	1-249-421-11	CARBON	2.2K	5%	1/4W
R211	1-259-467-11	CARBON	43K	5%	1/6W

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

MAIN

Ref. No.	Part No.	Description			Remarks
R212	1-259-428-11	CARBON	1K	5%	1/6W
R215	1-249-421-11	CARBON	2.2K	5%	1/4W
R221	1-259-466-11	CARBON	39K	5%	1/6W(K679ES)
R221	1-259-476-11	CARBON	100K	5%	1/6W(K690)
R222	1-259-402-11	CARBON	82	5%	1/6W
R223	1-259-479-11	CARBON	130K	5%	1/6W
R224	1-259-446-11	CARBON	5.6K	5%	1/6W
R225	1-259-434-11	CARBON	1.8K	5%	1/6W
R226	1-259-435-11	CARBON	2K	5%	1/6W
R227	1-259-484-11	CARBON	220K	5%	1/6W
R231	1-249-429-11	CARBON	10K	5%	1/4W
R232	1-249-429-11	CARBON	10K	5%	1/4W
R233	1-249-429-11	CARBON	10K	5%	1/4W
R234	1-259-461-11	CARBON	24K	5%	1/6W
R235	1-259-422-11	CARBON	560	5%	1/6W
R236	1-259-452-11	CARBON	10K	5%	1/6W
R237	1-259-476-11	CARBON	100K	5%	1/6W
R241	1-259-444-11	CARBON	4.7K	5%	1/6W
R242	1-259-442-11	CARBON	3.9K	5%	1/6W
R243	1-259-440-11	CARBON	3.3K	5%	1/6W
R244	1-259-452-11	CARBON	10K	5%	1/6W
R245	1-249-421-11	CARBON	2.2K	5%	1/4W
R246	1-259-444-11	CARBON	4.7K	5%	1/6W
R251	1-249-433-11	CARBON	22K	5%	1/4W
R252	1-249-421-11	CARBON	2.2K	5%	1/4W
R253	1-247-862-11	CARBON	20K	5%	1/4W
R254	1-249-409-11	CARBON	220	5%	1/4W
R261	1-249-434-11	CARBON	27K	5%	1/4W
R262	1-247-874-11	CARBON	62K	5%	1/4W
R263	1-249-410-11	CARBON	270	5%	1/4W
R281	1-249-428-11	CARBON	8.2K	5%	1/4W(K679ES)
R281	1-249-427-11	CARBON	6.8K	5%	1/4W(K690)
R282	1-249-435-11	CARBON	33K	5%	1/4W
⚠R283	1-219-153-11	FUSIBLE	10	5%	1/4W F
R284	1-247-883-00	CARBON	150K	5%	1/4W
R501	1-259-428-11	CARBON	1K	5%	1/6W
R502	1-215-455-00	METAL	27K	1%	1/6W
R505	1-249-427-11	CARBON	6.8K	5%	1/4W
R506	1-249-381-11	CARBON	1	5%	1/4W
R507	1-247-848-11	CARBON	5.1K	5%	1/4W
R508	1-249-433-11	CARBON	22K	5%	1/4W
R509	1-249-436-11	CARBON	39K	5%	1/4W
R510	1-249-421-11	CARBON	2.2K	5%	1/4W
R511	1-249-421-11	CARBON	2.2K	5%	1/4W
R512	1-249-441-11	CARBON	100K	5%	1/4W
R513	1-249-441-11	CARBON	100K	5%	1/4W
R514	1-247-836-11	CARBON	1.6K	5%	1/4W
R516	1-249-437-11	CARBON	47K	5%	1/4W
R517	1-249-433-11	CARBON	22K	5%	1/4W

Ref. No.	Part No.	Description			Remarks
R518	1-249-427-11	CARBON	6.8K	5%	1/4W
R519	1-249-437-11	CARBON	47K	5%	1/4W
R520	1-249-434-11	CARBON	27K	5%	1/4W
R521	1-247-704-11	CARBON	220	5%	1/4W
R522	1-247-704-11	CARBON	220	5%	1/4W
R523	1-249-429-11	CARBON	10K	5%	1/4W
R524	1-249-429-11	CARBON	10K	5%	1/4W
R525	1-249-429-11	CARBON	10K	5%	1/4W
R526	1-249-422-11	CARBON	2.7K	5%	1/4W
R527	1-249-437-11	CARBON	47K	5%	1/4W
R528	1-249-441-11	CARBON	100K	5%	1/4W
R529	1-249-431-11	CARBON	15K	5%	1/4W
R531	1-259-428-11	CARBON	1K	5%	1/6W
R532	1-215-455-00	METAL	27K	1%	1/6W
R533	1-249-437-11	CARBON	47K	5%	1/4W
R534	1-249-441-11	CARBON	100K	5%	1/4W
R535	1-215-454-00	METAL	24K	1%	1/6W
R563	1-249-441-11	CARBON	100K	5%	1/4W
R564	1-249-429-11	CARBON	10K	5%	1/4W
R565	1-249-441-11	CARBON	100K	5%	1/4W
R566	1-249-428-11	CARBON	8.2K	5%	1/4W
R567	1-249-441-11	CARBON	100K	5%	1/4W
R568	1-249-423-11	CARBON	3.3K	5%	1/4W
R569	1-249-441-11	CARBON	100K	5%	1/4W
R570	1-249-429-11	CARBON	10K	5%	1/4W
R571	1-249-429-11	CARBON	10K	5%	1/4W
R572	1-249-417-11	CARBON	1K	5%	1/4W
R581	1-249-429-11	CARBON	10K	5%	1/4W
R582	1-249-429-11	CARBON	10K	5%	1/4W
R583	1-247-826-00	CARBON	620	5%	1/4W(K679ES)
R583	1-247-822-11	CARBON	430	5%	1/4W(K690)
R584	1-247-834-11	CARBON	1.3K	5%	1/4W(K679ES)
R584	1-249-417-11	CARBON	1K	5%	1/4W(K690)
R585	1-247-872-11	CARBON	51K	5%	1/4W(K679ES)
R585	1-247-862-11	CARBON	20K	5%	1/4W(K690)
R586	1-249-417-11	CARBON	1K	5%	1/4W
R587	1-249-436-11	CARBON	39K	5%	1/4W
R588	1-249-436-11	CARBON	39K	5%	1/4W
R589	1-249-391-11	CARBON	6.8	5%	1/4W
R590	1-249-391-11	CARBON	6.8	5%	1/4W
R591	1-249-421-11	CARBON	2.2K	5%	1/4W
R592	1-249-429-11	CARBON	10K	5%	1/4W
R601	1-249-440-11	CARBON	82K	5%	1/4W(K679ES)
R601	1-249-439-11	CARBON	68K	5%	1/4W(K690)
R602	1-249-435-11	CARBON	33K	5%	1/4W
R603	1-249-439-11	CARBON	68K	5%	1/4W(K679ES)
R603	1-249-437-11	CARBON	47K	5%	1/4W(K690)
R604	1-247-876-11	CARBON	75K	5%	1/4W(K679ES)
R604	1-247-874-11	CARBON	62K	5%	1/4W(K690)

Note:
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Note:
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Ref. No.	Part No.	Description			Remarks
R605	1-249-439-11	CARBON	68K	5%	1/4W(K679ES)
R605	1-249-441-11	CARBON	100K	5%	1/4W(K690)
R606	1-249-433-11	CARBON	22K	5%	1/4W
R607	1-247-874-11	CARBON	62K	5%	1/4W
R608	1-249-437-11	CARBON	47K	5%	1/4W
R609	1-247-882-11	CARBON	130K	5%	1/4W(K679ES)
R609	1-247-880-11	CARBON	110K	5%	1/4W(K690)
R610	1-247-876-11	CARBON	75K	5%	1/4W(K679ES)
R610	1-247-878-00	CARBON	91K	5%	1/4W(K690)
R611	1-249-438-11	CARBON	56K	5%	1/4W(K679ES)
R611	1-249-439-11	CARBON	68K	5%	1/4W(K690)
R612	1-247-887-00	CARBON	220K	5%	1/4W
R613	1-247-876-11	CARBON	75K	5%	1/4W(K679ES)
R613	1-249-439-11	CARBON	68K	5%	1/4W(K690)
R614	1-247-872-11	CARBON	51K	5%	1/4W
R616	1-249-437-11	CARBON	47K	5%	1/4W(K679ES)
R616	1-247-874-11	CARBON	62K	5%	1/4W(K690)
R617	1-249-440-11	CARBON	82K	5%	1/4W(K679ES)
R617	1-247-874-11	CARBON	62K	5%	1/4W(K690)
R618	1-247-883-00	CARBON	150K	5%	1/4W(K679ES)
R618	1-247-886-11	CARBON	200K	5%	1/4W(K690)
R619	1-249-435-11	CARBON	33K	5%	1/4W
R701	1-247-887-00	CARBON	220K	5%	1/4W
R702	1-247-887-00	CARBON	220K	5%	1/4W
R703	1-249-436-11	CARBON	39K	5%	1/4W
R704	1-247-887-00	CARBON	220K	5%	1/4W
R705	1-249-436-11	CARBON	39K	5%	1/4W
R706	1-247-887-00	CARBON	220K	5%	1/4W
R707	1-249-431-11	CARBON	15K	5%	1/4W
R708	1-247-868-11	CARBON	36K	5%	1/4W
R709	1-249-435-11	CARBON	33K	5%	1/4W
R710	1-249-435-11	CARBON	33K	5%	1/4W
R711	1-247-872-11	CARBON	51K	5%	1/4W
R712	1-249-435-11	CARBON	33K	5%	1/4W
R713	1-249-435-11	CARBON	33K	5%	1/4W
R714	1-249-435-11	CARBON	33K	5%	1/4W
R715	1-249-435-11	CARBON	33K	5%	1/4W
R716	1-249-435-11	CARBON	33K	5%	1/4W
R717	1-249-435-11	CARBON	33K	5%	1/4W
R719	1-249-429-11	CARBON	10K	5%	1/4W
⚠R720	1-212-954-11	FUSIBLE	6.8	5%	1/2W F
R721	1-249-429-11	CARBON	10K	5%	1/4W
R722	1-249-431-11	CARBON	15K	5%	1/4W
R723	1-247-834-11	CARBON	1.3K	5%	1/4W
R724	1-249-424-11	CARBON	3.9K	5%	1/4W
R725	1-247-834-11	CARBON	1.3K	5%	1/4W
R726	1-249-427-11	CARBON	6.8K	5%	1/4W
R727	1-249-430-11	CARBON	12K	5%	1/4W
⚠R728	1-212-952-00	FUSIBLE	5.6	5%	1/2W F

Ref. No.	Part No.	Description			Remarks
R729	1-249-435-11	CARBON	33K	5%	1/4W
R730	1-249-435-11	CARBON	33K	5%	1/4W
R731	1-249-425-11	CARBON	4.7K	5%	1/4W
R732	1-249-417-11	CARBON	1K	5%	1/4W
R733	1-247-903-00	CARBON	1M	5%	1/4W
R735	1-249-421-11	CARBON	2.2K	5%	1/4W
⚠R736	1-212-942-00	FUSIBLE	2.2	5%	1/2W F
R737	1-249-429-11	CARBON	10K	5%	1/4W
R738	1-249-429-11	CARBON	10K	5%	1/4W
R739	1-249-429-11	CARBON	10K	5%	1/4W
R740	1-249-425-11	CARBON	4.7K	5%	1/4W
R742	1-249-441-11	CARBON	100K	5%	1/4W
R743	1-249-441-11	CARBON	100K	5%	1/4W
R744	1-249-441-11	CARBON	100K	5%	1/4W
R745	1-249-432-11	CARBON	18K	5%	1/4W
R746	1-249-429-11	CARBON	10K	5%	1/4W
R747	1-249-429-11	CARBON	10K	5%	1/4W
R748	1-249-429-11	CARBON	10K	5%	1/4W
R749	1-247-862-11	CARBON	20K	5%	1/4W
R750	1-247-866-11	CARBON	30K	5%	1/4W
R752	1-249-441-11	CARBON	100K	5%	1/4W
R753	1-249-441-11	CARBON	100K	5%	1/4W
R754	1-249-441-11	CARBON	100K	5%	1/4W
R755	1-249-441-11	CARBON	100K	5%	1/4W
R770	1-249-441-11	CARBON	100K	5%	1/4W
R802	1-249-425-11	CARBON	4.7K	5%	1/4W
R803	1-249-420-11	CARBON	1.8K	5%	1/4W
R804	1-249-412-11	CARBON	390	5%	1/4W
R805	1-249-427-11	CARBON	6.8K	5%	1/4W
R806	1-249-419-11	CARBON	1.5K	5%	1/4W
R807	1-259-452-11	CARBON	10K	5%	1/6W
R808	1-259-432-11	CARBON	1.5K	5%	1/6W
R809	1-249-425-11	CARBON	4.7K	5%	1/4W
R810	1-249-409-11	CARBON	220	5%	1/4W
R811	1-259-428-11	CARBON	1K	5%	1/6W
R812	1-259-448-11	CARBON	6.8K	5%	1/6W
R813	1-259-448-11	CARBON	6.8K	5%	1/6W
R814	1-249-417-11	CARBON	1K	5%	1/4W
R815	1-249-425-11	CARBON	4.7K	5%	1/4W
R816	1-249-425-11	CARBON	4.7K	5%	1/4W
R817	1-249-425-11	CARBON	4.7K	5%	1/4W
R818	1-249-433-11	CARBON	22K	5%	1/4W
R819	1-249-436-11	CARBON	39K	5%	1/4W
R820	1-249-429-11	CARBON	10K	5%	1/4W
R821	1-249-437-11	CARBON	47K	5%	1/4W
⚠R825	1-219-135-11	FUSIBLE	0.15	10%	1/4W
⚠R826	1-219-137-11	FUSIBLE	0.33	10%	1/4W

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MAIN REEL MOTOR

Ref. No.	Part No.	Description	Remarks
		< VARIABLE RESISTOR >	
RV121	1-238-015-11	RES, ADJ, CARBON 4.7K	
RV141	1-238-017-11	RES, ADJ, CARBON 22K	
RV181	1-238-017-11	RES, ADJ, CARBON 22K	
RV221	1-238-015-11	RES, ADJ, CARBON 4.7K	
RV241	1-238-017-11	RES, ADJ, CARBON 22K	
RV281	1-238-017-11	RES, ADJ, CARBON 22K	
RV501	1-241-403-11	RES, VAR, CARBON 50K/50K (REC LEVEL)	
RV502	1-238-904-11	RES, VAR, CARBON 50K/50K (BALANCE)	
RV503	1-241-404-11	RES, VAR, CARBON 5K/5K (REC LEVEL)	
RV504	1-238-015-11	RES, ADJ, CARBON 4.7K	
RV505	1-238-085-11	REA, VAR, CARBON 20K/20K (PHONE LEVEL)	
RV506	1-241-747-11	RES, VAR, CARBON 10K (BIAS)	
RV508	1-238-021-11	RES, ADJ, CARBON 220K (K679ES)	
RV508	1-238-022-51	RES, ADJ, CARBON 330K (K690)	
		< SWITCH >	
S501	1-572-154-11	SWITCH, ROTARY (DOLBY NR)	
S502	1-554-118-00	SWITCH, PUSH (1 KEY) (MPX FILTER)	
S701	1-571-520-11	SWITCH, SLIDE (TIMER)	
S801	1-554-118-00	SWITCH, PUSH (1 KEY) (POWER)	
		< TRANSFORMER >	
T181	1-433-344-11	TRANSFORMER, BIAS OSCILLATION	
T281	1-433-344-11	TRANSFORMER, BIAS OSCILLATION	
T501	1-433-380-11	TRANSFORMER, BIAS OSCILLATION	
		< VIBRATOR >	
X701	1-577-359-21	VIBRATOR, CERAMIC 4.19MHz	
**********			
*	1-632-741-11	REEL MOTOR BOARD	
		**********	
		< CAPACITOR >	
C1051	1-124-907-11	ELECT 10uF 20% 50V	
C1052	1-124-907-11	ELECT 10uF 20% 50V	
C1053	1-164-159-11	CERAMIC 0.1uF 50V	
		< CONNECTOR >	
* CN1051	1-564-499-11	PIN, CONNECTOR 6P	
* CN1052	1-564-718-11	PIN, CONNECTOR (SMALL TYPE) 2P	
* CN1053	1-564-718-11	PIN, CONNECTOR (SMALL TYPE) 2P	
		< RESISTOR >	
R1051	1-249-414-11	CARBON 560 5% 1/4W	
**********			

Ref. No.	Part No.	Description	Remarks
		MISCELLANEOUS	
		**********	
⚠12	1-555-795-00	CORD, POWER, EULO PLUG (K690:AEP, Germany)	
⚠12	1-556-035-00	CORD, POWER (K679ES:UK)	
⚠12	1-558-945-11	CORD, POWER (POLAR. SPT-1) (K679ES:US, Canadian/K690:US)	
* 125	1-608-268-00	PC BOARD, ERASE HEAD	
D1051	8-719-980-85	DIODE SLF325C	
HE1001	1-543-836-11	HEAD, MAGNETIC (ERASE)	
HRP1001	1-543-834-11	HEAD, MAGNETIC (REC/PB) (K690)	
HRP1001	1-543-835-11	HEAD, MAGNETIC (REC PB) (K679ES)	
M1051	X-3356-638-1	MOTOR (REEL R) ASSY	
M1052	X-3356-604-1	MOTOR (ASSIST) ASSY	
M1053	X-3356-635-1	MOTOR (CAPSTAN R2) ASSY	
S1001	1-466-238-11	ENCODER, ROTARY	
⚠T901	1-450-100-11	TRANSFORMER, POWER (K679ES:US, Canadian /690:US)	
⚠T901	1-450-399-11	TRANSFORMER, POWER (K679ES:UK /K690:AEP, Germany)	
**********			
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-558-271-11	CORD, CONNECTION	
	1-558-271-11	CORD, CONNECTION	
*	3-350-830-01	CUSHION (K690)	
*	3-376-443-41	INDIVIDUAL CARTON (K690)	
	3-755-069-21	MANUAL, INSTRUCTION (ENGLISH) (K679ES)	
	3-755-069-31	MANUAL, INSTRUCTION (FRENCH) (K679ES:Canadian)	
	3-755-084-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH) (K690:AEP)	
	3-755-084-21	MANUAL, INSTRUCTION (ENGLISH) (K690:US)	
	3-755-084-41	MANUAL, INSTRUCTION (GERMAN, DUTCH, SWEDISH, ITALIAN, PORTUGUESE) (K690:AEP)	
	3-755-084-51	MANUAL, INSTRUCTION (GERMAN) (K690:Germany)	
	3-793-481-13	INSTRUCTION	
	9-910-999-33	INSTRUCTION (K679ES:US/K690:US)	
**********			

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HARDWARE LIST

****

Ref. No.	Part No.	Description	Remarks
#1	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
#2	7-682-547-04	SCREW +BVTT 3X6 (S)	
#3	7-682-548-09	SCREW +BVTT 3X8 (S)	
#4	7-621-849-00	SCREW (BV/RING)	
#5	7-671-154-01	STENLESS BALL	
#6	7-628-253-00	SCREW +PS 2X4	
#7	7-685-133-19	SCREW +BTP 2.6X6 TYPE2 N-S	
#8	7-621-255-20	SCREW +BVTT 2X4 (S)	
#10	7-621-772-70	SCREW +B 2X14	
#11	7-622-205-05	NUT M2 TYPE2	
#12	7-621-772-18	SCREW +B 2X4	
#13	7-621-773-86	SCREW +B 2.6X4 (K679ES)	
#13	7-621-775-10	SCREW +B 2.6X4 (K690)	
#14	7-621-255-35	SCREW +BVTT 2X5 (S)	
#15	7-682-647-09	SCREW +PS 3X6	
#16	7-685-870-01	SCREW +BVTT 3X5 (S)	